

Appendix D

Cost Estimate



Conceptual Design Report for Ex Situ Chemical Oxidation/Reduction and Stabilization of the V-Tanks

COST ESTIMATE SUPPORT DATA RECAPITULATION

Project Title: WAG-1 V-TANKS EX-SITU CHEMICAL OXIDATION / REDUCTION /
STABILIZATION
Estimator: B. W. Wallace/R. D. Roseland
Date: June 6, 2003
Estimate Type: Project Support
File: 6304-A
Approved By:

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- I. **PURPOSE:** *Brief description of the intent of how the estimate is to be used, i.e., for engineering study, comparative analysis, DWP, LCB out-year planning, BCP, etc.*
The purpose of this estimate is to provide an “updated” planning position for the project. The estimate is not intended for use in funding determination. It has not been subjected to the rigor of a formal jury review nor has an additional contingency analysis been performed.

- II. **SCOPE OF WORK:** *Brief statement of the project’s objective. Thorough overview and description of the proposed project. Identify work to be accomplished, as well as any specific work to be excluded.*

Prepare a revised Project Support estimate to address the current knowledge and processes identified for use in the performance of chemical oxidation with grout stabilization of the V-Tanks contents. It is understood and recognized that the technology and processes required to perform the work are dynamic in nature and rapidly evolving. It is intended that this estimate will create an intermediate record of the costs associated with performance of the work as we currently define it. It is recognized that the most probable process direction will not be completely identified until the results of a cold bench test are available. The requester has limited the elements addressed in this estimate to those associated with a subcontractor’s performance according to the CDR design. Total Project Cost (TPC) was not addressed, as it was in the Technical Evaluation Report (TER) estimate and a Net Present Value (NPV) calculation has not been performed. Both of these actions will be performed for the 30% design where funding for the process will be affected.

The requester has directed Estimating Services to perform this work using minimal resources. All costs that represent Other Project Costs (OPC) have not been included in this estimate in order to provide partial compliance with this request.

This estimate reflects subcontractor costs to treat and dispose of waste that is currently residing in the Test Area North (TAN) V-tanks (tanks V-1, V-2, V-3, and V-9) using an ex-situ chemical oxidation and stabilization (COS) process. This waste, the tanks and interconnecting piping, contaminated soil surrounding the tanks, and equipment

COST ESTIMATE SUPPORT DATA RECAPITULATION

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Project Title: WAG-1 V-TANKS EX-SITU CHEMICAL OXIDATION / REDUCTION /
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contaminated during the process will be disposed of at the INEEL CERCLA Disposal Facility (ICDF). Off-gas residuals are shipped to an off-site facility for treatment and disposal. The excavated area is then backfilled, graded and restored to original condition.

The CDR does not address removal of tanks, soils, etc., but these items are integral to the project requirements and have been included. Full documentation for the original TER estimate (Estimating Services file #6304) resides in Estimating Services files and can be consulted for additional information if required.

III. **BASIS OF THE ESTIMATE:** *Overall methodology and rationale of how the estimate was developed. Source documents to include drawings, design reports, engineers' notes and/or other documentation upon which the estimate is originated. Overall explanation of sources for resource pricing.*

The estimate is based on conceptual level drawings and specifications, process flow diagrams, and discussions with the principle investigators for the COS process and other Waste Area Group One (WAG-1) personnel. Following is a listing of principle investigators and WAG 1 personnel. These subject matter experts and engineers consulted with Estimating Services for the purpose of producing this estimate.

E. C. Miller
D. A. Cresap
M. D. Elliot
R. K. Farnsworth
G. E. McDannel
J. J. Jessmore
A. E. Jantz
K. F. Childs
J. D. Harris
R. A. Montgomery

Following is a listing of contributing designers responsible for the CDR. These engineers consulted with Estimating Services for the purpose of producing this estimate.

S. M. Allen
P. W. Bragassa
K. R. Ward
R. K. Farnsworth
D. L. Eaton
E. B. Thompson
D. S. Wendt
B. D. Raivo

COST ESTIMATE SUPPORT DATA RECAPITULATION

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Project Title: WAG-1 V-TANKS EX-SITU CHEMICAL OXIDATION / REDUCTION /
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Production labor rates and material/equipment costs or allowances have been provided using a combination of estimator projections and estimating guides such as Richardsons and Means. The level of detail available during the production of these estimates precluded producing more detailed bills of material.

IV. ASSUMPTIONS: *Condition statements accepted or supposed true without proof of demonstration; statements adding clarification to scope. An assumption has a direct impact on total estimated cost.*

- A. All materials, equipment, etc., will be provided by a subcontractor and not by Bechtel BWXT Idaho, LLC.
- B. All sample analysis and secondary waste disposal will be accomplished using existing Bechtel BWXT Idaho, LLC subcontracts. No provisions for G&A costs have been included for these items.
- C. This project will be awarded to a subcontractor/subcontractors through the competitive bidding process. A sufficient number of respondents will be available to provide a competitive bidding climate.
- D. The subcontractor's proposal will include the engineering effort required to treat and dispose of the V-tank contents and the soils around them. This effort will be based on procurement specifications developed by BBWI.
- E. The subcontractor will purchase waste treatment equipment selected from commercially available technologies, assembled and compartmentalized on skids (with enclosures as required) that can be easily assembled at the job site. It was also assumed the subcontractor would fabricate these equipment skids from new equipment and materials for this project specific waste treatment endeavor.
- F. The subcontractor will be required to assemble and successfully demonstrate the operations of the waste treatment equipment prior to the actual on-site treatment of the V-tank contents. It was assumed that the demonstration would be completed at or adjacent to the V-tank location.
- G. This project will provide for clean closure of the site.
- H. At the completion of the remediation work, the entire site will be backfilled with clean soil and contoured to match existing surroundings. It was assumed this soil would be available from an on-site source near TAN.
- I. All soils shipped to the ICDF will be transported in roll-off containers. It was assumed these containers would be provided to the subcontractor by ICDF at no cost.
- J. Treatment/disposal and shipping costs for waste shipped off-site will not be included in the subcontractor proposals. Costs associated with off-site disposal will be borne by BBWI.

COST ESTIMATE SUPPORT DATA RECAPITULATION

- Continued -

Project Title: WAG-1 V-TANKS EX-SITU CHEMICAL OXIDATION / REDUCTION /
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- K. Samples from the waste streams will be collected by the subcontractor and delivered to BBWI for analysis. It was also assumed that no automated sampling extraction system would be required.
- L. An allowance has been included in the estimate for confirmation sample analysis of the soil to be excavated. Costs for sampling the loads of soil being transported to the ICDF are not included in the estimate.
- M. Contents in the V-tanks can be readily extracted into the batch reaction tank.
- N. It was assumed that all process equipment will be housed in a 30' x 60' x 15' "sprung-type" enclosure.
- O. A small allowance for radiation shielding has been included in the estimate.
- P. Shoring will be required for a portion of the excavation.
- Q. The subcontractor will be responsible to provide adequate oversight for safety, radiation monitoring, engineering, and quality assurance. These activities will also be monitored and supervised by BBWI personnel.
- R. Grout mix proportions have been assumed to be approximately one part Portland cement to one part sand.
- S. Equipment sizing information and material quantities per the equipment list provided by the principle investigators are accurate.
- T. It was assumed that the four V-tanks will be decontaminated and size reduced (vs. grouted) for disposal at the ICDF.
- U. The chemical oxidation and grouting/containerization processes for each tank will be performed on an "around the clock" basis until completion.
- V. Jacketed, glass-lined, stainless steel reactor vessels with agitators, heating and cooling provisions, and instrumentation will be required.
- W. Stainless steel feed/make-up tanks with pumps, mixers, and instrumentation will be required.
- X. An "AEA" fluidic jet mixing sludge removal system will be required. While it is possible this system may be obtained from others within the DOE system for little or no cost, it can not be guaranteed that the system will be available in a manner that best facilitates prosecution of this work. Until such time when that can be determined, the full cost for the system will remain in this estimate.
- Y. A grout mixer/extruder will be required.
- Z. An off-gas and exhaust system will be required.
- AA. Activity specific assumptions that are considered to also reflect the basis of this estimate have been included within the estimate body (reference cost estimating detail sheets).
- BB. Weather conditions experienced during the processing of the waste will be such that the completion of the project is not unduly impacted.

COST ESTIMATE SUPPORT DATA RECAPITULATION

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V. **CONTINGENCY GUIDELINE IMPLEMENTATION:** *Explanation of methodology used in determining overall contingency. Identify any specific drivers or items of concern.*

The level of contingency identified during the TER process has been carried forward and included in this estimate. Following is the complete identification of contingency as it was applied in that estimate.

The following identifies the process used in developing/applying contingency during the Technical Evaluation Report (TER) process. These same levels of contingency have been carried to this estimate. The final process is not sufficiently identified nor has sufficient time/resources been allocated to perform an additional contingency analysis for this estimate. This will be performed for the 30% design estimate.

A risk application tool was used, which linked the Success estimating software with @RISK risk analysis software. In the @RISK program, the key estimated cost summary levels were assigned low and high values. These values represent a degree of confidence in the accuracy and completeness of the information provided to the estimator. These bounding values are then run through a Latin Hypercube sampling simulation 10,000 times to arrive at the additional money required to address risk at various levels of confidence. A confidence level of 85% was chosen for this estimate. The risk output is shown both in a tabular format and graphically. The calculated risk amounts, represented as percentages of the appropriate levels, were applied to the estimate levels to give the most-likely cost, including risk, for the chosen level of confidence. Contingencies for the 85% probability level are included in the estimate at an overall rate of 51.21%.

Some of the risks considered in addressing these possibilities are as follows:

- A. The work process required is relatively new in the application identified. It has proven to be very dynamic in nature with the final work process uncertain at this time.
- B. Requirements for treatment/disposal may differ from those currently expected or the material extracted could prove to require a different level of treatment and disposal from that expected. The estimate does not reflect any costs that may be incurred due to materials being rejected after being treated, stabilized, or packaged for disposal.
- C. Extraction of the V-tank contents with the fluidic jet mixing sludge removal system may be more difficult than expected.
- D. The chemical oxidation process may not provide the expected results and may take longer than expected.
- E. The grout mixing/extruding equipment may not perform as expected.

COST ESTIMATE SUPPORT DATA RECAPITULATION

- Continued -

Project Title: WAG-1 V-TANKS EX-SITU CHEMICAL OXIDATION / REDUCTION /
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- F. Greater shielding control other than that expected and provided for could be imposed.
- G. Greater containment control beyond that expected and provided for could be imposed.
- H. Process piping, electrical, and instrumentation requirements could be greater than anticipated.

VI. OTHER COMMENTS/CONCERNS SPECIFIC TO THE ESTIMATE:

- A. Costs for current Idaho state sales tax have been included in the estimate.
- B. A total markup of 26% for subcontractor overhead, profit, and bond costs has been included in the estimate. A 10% handling fee has been included for subtier contractors.

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEL - TAN**
 Estimate Number: **6304-A**

Project Summary Report

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Level</u>	<u>Group</u>	<u>Description</u>	<u>Estimate Subtotal</u>	<u>Escalation</u>	<u>Contingency</u>	<u>Contingency %</u>	<u>TOTAL</u>
05		Remedial Action	\$13,435,313	\$1,593,189	\$7,696,517	51.21%	\$22,725,018
05.03		---Remedial Action PM	\$2,916,831	\$383,563	\$825,098	25.00%	\$4,125,492
05.03.01		----Remedial Action PM During FY-06	\$1,458,416	\$167,718	\$406,533	26.00%	\$2,032,666
05.03.02		----Remedial Action PM During FY-06	\$1,458,416	\$215,845	\$418,566	26.00%	\$2,092,826
05.04		---Remedial Action					
05.04.01		----M&O CONTRACTOR COG OPERATIONS SUPPORT	\$10,518,483	\$1,209,625	\$6,871,418	58.59%	\$18,599,526
05.04.01.01		-----M&O CONTRACTOR SUPPORT DURING MOCKUP PHASE (5-DAY WEEK)	\$976,370	\$112,283	\$840,920	77.24%	\$1,929,572
05.04.01.02		-----M&O CONTRACTOR SUPPORT DURING SITE MOB & SET-UP	\$123,482	\$14,200	\$106,352	77.24%	\$244,035
05.04.01.03		-----M&O CONTRACTOR SUPPORT DURING 24-HOUR OXIDATION PROCESS	\$123,365	\$14,187	\$106,251	77.24%	\$243,803
05.04.01.04		-----M&O CONTRACTOR SUPPORT DURING WASTE DISPOSAL & PROCESS DEMOB	\$320,941	\$36,908	\$276,417	77.24%	\$634,266
05.04.01.05		-----M&O CONTRACTOR SUPPORT DURING TANK REMOVAL/SITE RESTORATION	\$113,495	\$13,052	\$97,750	77.24%	\$224,297
05.04.02		---CONSTRUCTION/OPERATIONS (SUBCONTRACTOR)	\$9,084,246	\$1,044,688	\$6,672,202	56.00%	\$15,801,137
05.04.02.01		----CONSTRUCTION/OPERATIONS	\$9,084,246	\$1,044,688	\$5,672,202	56.00%	\$15,801,137
05.04.02.01.		----SUBCONTRACTOR ENGINEERING/SUBMITTALS	\$3,142,260	\$361,360	\$2,322,550	66.29%	\$5,826,170
05.04.02.01.		----EQUIPMENT PURCHASE	\$2,819,701	\$324,266	\$1,553,127	49.40%	\$4,697,094
05.04.02.01.		----SURGE & EXTRACTION SYSTEM	\$1,669,500	\$191,993	\$826,116	44.38%	\$2,687,608
05.04.02.01.		----CHEMICAL FEED SYSTEMS	\$241,517	\$27,774	\$149,009	55.33%	\$418,300
05.04.02.01.		----CHEMICAL OXIDATION & GROUTING SYSTEM	\$525,452	\$60,427	\$388,370	66.29%	\$974,249
05.04.02.01.		----OFF GAS SYSTEM	\$42,363	\$4,872	\$20,962	44.38%	\$68,197
05.04.02.01.		----EXHAUST SYSTEM	\$218,997	\$25,185	\$108,364	44.38%	\$352,545
05.04.02.01.		----CONTROL TRAILER	\$53,424	\$6,144	\$26,436	44.38%	\$86,003
05.04.02.01.		-----ABOVE GROUND TEMPORARY STORAGE TANK (AGTST)	\$13,356	\$1,536	\$6,609	44.38%	\$21,501
05.04.02.01.		-----550-GALLON POLYETHYLENE CONTAINERS (HICs)	\$55,094	\$6,336	\$27,262	44.38%	\$88,691
05.04.02.01.		-----GENERAL & SPECIAL CONDITIONS	\$949,130	\$109,150	\$469,628	44.38%	\$1,527,907

INEEL

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Revision To Previous TPC Estimate 6304
 Project Location: **INNEEL - TAN**
 Estimate Number: **6304-A**

Project Summary Report

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Level</u>	<u>Group</u>	<u>Description</u>	<u>Estimate Subtotal</u>	<u>Escalation</u>	<u>Contingency</u>	<u>Contingency %</u>	<u>TOTAL</u>
05.04.02.01.		—SUBCONTRACTOR GCs DURING MOCKUP PHASE (5-DAY WEEK)	\$178,004	\$20,470	\$88,076	4.38%	\$285,551
05.04.02.01.		—SUBCONTRACTOR GCs DURING SITE MOB & SET-UP (4-DAY WEEK)	\$148,447	\$17,071	\$73,452	44.38%	\$238,971
05.04.02.01.		—SUBCONTRACTOR GCs DURING 24-HOUR OXIDATION PROCESS	\$185,077	\$21,284	\$91,576	44.38%	\$297,937
05.04.02.01.		—SUBCONTRACTOR GCs DURING WASTE DISPOSAL & PROCESS DEMOB (4-DAY WEEK)	\$125,755	\$14,462	\$62,223	44.38%	\$202,439
05.04.02.01.		—SUBCONTRACTOR GCs DURING TANK REMOVAL/SITE RESTORATION (4-DAY WEEK)	\$311,846	\$35,862	\$154,301	44.38%	\$502,009
05.04.02.01.		—OPERATIONS	\$2,173,155	\$249,913	\$1,326,898	54.76%	\$3,749,965
05.04.02.01.		—MOCKUP & DRY RUN TESTING IN I.F.	\$237,838	\$27,351	\$146,728	55.33%	\$411,917
05.04.02.01.		—I.F. RENTAL FACILITY FOR MOCKUP	\$127,890	\$14,707	\$78,898	55.33%	\$221,496
05.04.02.01.		—SET UP SURGE & EXTRACTION TANK (AEA SYSTEM)	\$9,561	\$1,099	\$5,898	55.33%	\$16,558
05.04.02.01.		—SET UP CONTROL TRAILER & GENERATOR	\$23,902	\$2,749	\$14,746	55.33%	\$41,396
05.04.02.01.		—SET UP CHEMICAL FEED & GROUTING SYSTEMS	\$25,495	\$2,932	\$15,729	55.33%	\$44,156
05.04.02.01.		—SET UP REACTION VESSELS & CHILLERS	\$15,934	\$1,832	\$9,830	55.33%	\$27,597
05.04.02.01.		—SET UP OFF GAS SYSTEM	\$19,121	\$2,199	\$11,796	55.33%	\$33,117
05.04.02.01.		—PERFORM DRY RUN TEST	\$15,934	\$1,832	\$9,830	55.33%	\$27,597
05.04.02.01.		—PREPARE SITE & SET UP EQUIPMENT	\$538,329	\$61,908	\$227,010	37.82%	\$827,248
05.04.02.01.		—SITE PREPARATION	\$47,177	\$5,425	\$19,894	37.82%	\$72,197
05.04.02.01.		—SET UP SURGE & EXTRACTION TANK (AEA SYSTEM)	\$11,951	\$1,374	\$5,040	37.82%	\$16,365
05.04.02.01.		—SET UP CONTROL TRAILER & GENERATOR	\$31,869	\$3,665	\$13,439	37.82%	\$46,973
05.04.02.01.		—SET UP CHEMICAL FEED & GROUTING SYSTEMS	\$374,098	\$43,021	\$157,755	37.82%	\$574,874
05.04.02.01.		—SET UP REACTION VESSELS & CHILLERS	\$11,951	\$1,374	\$5,040	37.82%	\$18,365
05.04.02.01.		—SET UP OFF GAS SYSTEM	\$11,951	\$1,374	\$5,040	37.82%	\$18,365
05.04.02.01.		—INSTALL WEATHER PROTECTION TENTS	\$17,464	\$2,008	\$7,365	37.82%	\$26,837

INNEEL

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INNEEL - TAN**
 Estimate Number: **6304-A**

Project Summary Report

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Level</u>	<u>Group</u>	<u>Description</u>	<u>Estimate Subtotal</u>	<u>Escalation</u>	<u>Contingency</u>	<u>Contingency %</u>	<u>TOTAL</u>
05.04.02.01.		-----PERFORM INTEGRITY TEST	\$31,869	\$3,665	\$13,439	37.82%	\$48,973
05.04.02.01.		-----CHEMICAL OXIDATION & GROUTING PROCESS	\$525,616	\$60,446	\$368,514	66.29%	\$974,576
05.04.02.01.		-----WASTE DISPOSAL	\$154,933	\$17,817	\$114,521	66.29%	\$287,271
05.04.02.01.		-----INSTALL TANK SUMP ACCESS	\$45,856	\$5,273	\$33,895	66.29%	\$85,025
05.04.02.01.		-----PUMP RINSATE WATER FROM V-TANKS & ADD SOLIDIFICATION AGENT	\$23,018	\$2,647	\$17,014	66.29%	\$42,680
05.04.02.01.		-----TRANSPORT SOLIDIFIED RINSATE WATER TO ICDF EQUIPMENT	\$7,967	\$916	\$5,889	66.29%	\$14,773
05.04.02.01.		-----DECON, DISMANTLE, & DISPOSITION COG EQUIPMENT	\$31,869	\$3,665	\$23,556	66.29%	\$59,090
05.04.02.01.		-----TRANSPORT CURED GROUTED HCs TO ICDF	\$31,869	\$3,665	\$23,556	66.29%	\$59,090
05.04.02.01.		-----SAMPLING	\$14,353	\$1,651	\$10,610	66.29%	\$26,614
05.04.02.01.		-----EXCAVATE SOIL FOR DISPOSAL AT ICDF	\$523,377	\$60,188	\$322,911	55.33%	\$906,476
05.04.02.01.		-----DRIVE SHEET PILING	\$256,838	\$29,536	\$158,463	55.33%	\$444,838
05.04.02.01.		-----EXCAVATE SOIL & HAUL TO ICDF IN 10 CY ROLL-OFFS	\$266,538	\$30,652	\$164,448	55.33%	\$461,638
05.04.02.01.		-----REMOVE TANKS/PIPE/PILING FOR DISPOSAL AT ICDF	\$86,470	\$9,944	\$74,470	77.24%	\$170,844
05.04.02.01.		-----TANK/PIPE REMOVAL	\$19,918	\$2,291	\$17,154	77.24%	\$39,363
05.04.02.01.		-----TANK/PIPE DECON & SIZE REDUCTION	\$39,836	\$4,581	\$34,308	77.24%	\$78,725
05.04.02.01.		-----REMOVE SHEET PILING	\$16,380	\$1,884	\$14,107	77.24%	\$32,371
05.04.02.01.		-----TRANSPORT TANK/PIPE/PILING FOR DISPOSAL	\$10,336	\$1,189	\$8,901	77.24%	\$20,425
05.04.02.01.		-----BACKFILL WITH CLEAN MATERIAL	\$27,447	\$3,156	\$13,581	44.38%	\$44,185
05.04.02.01.		-----FINAL SITE RESTORATION & GRADING	\$47,498	\$5,462	\$23,503	44.38%	\$76,464
05.04.02.01.		-----INSTALL BOUNDARY MARKERS TO IDENTIFY AOC LIMITS	\$22,671	\$2,607	\$11,218	44.38%	\$36,497
05.04.02.01.		-----PROJECT CLOSEOUT	\$8,975	\$1,032	\$4,441	44.38%	\$14,449
05.04.03		-----SAMPLE ANALYSIS	\$413,490	\$47,541	\$328,403	71.26%	\$789,344
05.04.04		-----SECONDARY WASTE STREAM DISPOSAL FEES (PPes, Filter, Decon Liquids etc.)	\$44,467	\$5,114	\$29,893	60.29%	\$79,473

INNEEL

Project Summary Report

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
Revision To Previous TPC Estimate 6304
Project Location: INEEL - TAN
Estimate Number: 6304-A

<u>Level</u>	<u>Group</u>	<u>Description</u>	<u>Estimate Subtotal</u>	<u>Escalation</u>	<u>Contingency</u>	<u>Contingency %</u>	<u>TOTAL</u>
07		Material Handling Fees	\$331	\$38	\$92	25.00%	\$461

Total	Ex Situ Chemical Oxidation & Grouting WAG 1 V-Tanks	\$13,435,644	\$1,593,227	\$7,696,609	51.21%	\$22,725,480
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Client: *J. J. Jessmore*
Prepared By: *B. W. Wallace/R. D. Roseland*
Estimate Type: *Project Support*

DETAL ITEM REPORT
WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION
REVISION TO PREVIOUS TPC ESTIMATE 6304
Project Location: INEEL - TAN
Estimate Number: 6304-A

Client: J. J. Jessmore
Prepared By: B. W. Wallace/R. D. Roseland
Estimate Type: Project Support

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
A14	06.03.01 Remedial Action PM During FY-06	BBWI-A	U.C. per WEEK	52.00	40	A14 \$34.92	1396.767 \$72,632	0 \$0	0 \$0	0 \$0	1386.767 \$72,632
E03	SECRETARIAL	BBWI-A	U.C. per WEEK	40	40	E03 \$93.21	3728.524 \$193,883	0 \$0	0 \$0	0 \$0	3728.524 \$193,883
E06	CHEMICAL ENGINEERING	BBWI-A	U.C. per WEEK	52.00	2,080	E06 \$81.30	3251.998 \$42,276	0 \$0	0 \$0	0 \$0	3251.998 \$42,276
E11	ELECTRICAL ENGINEERING	BBWI-A	U.C. per WEEK	13.00	40	E11 \$31.44	3257.766 \$84,702	0 \$0	0 \$0	0 \$0	3257.766 \$84,702
E08	MECHANICAL ENGINEERING	BBWI-A	U.C. per WEEK	26.00	1,040	E08 \$79.75	3189.972 \$165,879	0 \$0	0 \$0	0 \$0	3189.972 \$165,879
E17	ENVIRONMENTAL ENGINEERING	BBWI-A	U.C. per WEEK	52.00	2,080	E17 \$74.43	2977.135 \$77,496	0 \$0	0 \$0	0 \$0	2977.135 \$77,496
E18	ENVIRONMENTAL ENGINEERING	BBWI-A	U.C. per WEEK	26.00	1,040	E18 \$73.98	2959.268 \$76,941	0 \$0	0 \$0	0 \$0	2959.268 \$76,941
E19	RADIOLOGICAL ENGINEERING	BBWI-A	U.C. per WEEK	26.00	1,040	E19 \$76.85	3074.15 \$79,928	0 \$0	0 \$0	0 \$0	3074.15 \$79,928
F22	SAFETY ENGINEERING	BBWI-A	U.C. per WEEK	26.00	40	F22 \$70.37	2815 \$73,190	0 \$0	0 \$0	0 \$0	2815 \$73,190
F23	SHIPPING, HAZARDOUS MATERIALS	BBWI-A	U.C. per WEEK	4.00	160	F23 \$61.68	2467.285 \$9,869	0 \$0	0 \$0	0 \$0	2467.285 \$9,869
P21	SUBCONTRACT ADMIN	BBWI-A	U.C. per WEEK	26.00	40	P21 \$64.87	2594.702 \$67,462	0 \$0	0 \$0	0 \$0	2594.702 \$67,462
P44	PLANNING AND CONTROLS	BBWI-A	U.C. per WEEK	26.00	1,040	P44 \$60.00	2399.92 \$62,398	0 \$0	0 \$0	0 \$0	2399.92 \$62,398
S21	REGULATORY COMPLIANCE - ENVIRONMENTAL	BBWI-A	U.C. per WEEK	26.00	1,040	S21 \$78.35	3134.194 \$81,489	0 \$0	0 \$0	0 \$0	3134.194 \$81,489
X16	MIXED/HAZARDOUS WASTE MANAGEMENT	BBWI-A	U.C. per WEEK	26.00	40	X16 \$68.79	2751.407 \$71,537	0 \$0	0 \$0	0 \$0	2751.407 \$71,537
NR4M	DOCUMENT CONTROL	U.C. per LS		1.00	0	NR4M \$0	0 \$0	0 \$0	0 \$0	0 \$0	24149 \$24,149
NRPR	RECORDS MANAGEMENT	U.C. per LS		1.00	0	NRPR \$0	0 \$0	0 \$0	0 \$0	0 \$0	26062 \$26,062

Memo: This allowance is a provision for level of effort support provided for document control. It is reflective of 520 hours effort.
Memo: This allowance is a provision for records management. It is reflective of 520 hours effort.

DETAL ITEM REPORT

WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION

REVISION TO PREVIOUS TPC ESTIMATE 6304

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
Project Location: **REFINERI - TAN**
Refineri - Previous TPC Estimate 6304
Client: **J. J. Jessmore**
Prepared By: **B. W. Wallace/R. D. Roseland**
F&E Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Resource</u>	<u>Hrs</u>	<u>Qty</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
<u>06.03.01</u>	<u>Remedial Action PM During FY-06</u>	U.C. per LS	NRPG	1.00	0	\$0	\$0	0	\$0	60789 \$60,789
NRPG	WRITER/EDITOR	U.C. per LS	NRPF	1.00	0	\$0	\$0	0	\$0	60789 \$60,789
Memo:	This allowance is a provision for level of effort support provided for text editing. It is reflective of 1040 hours effort.	U.C. per LS	NRPE	1.00	0	\$0	\$0	0	\$0	33498 \$33,498
NRPE	TEXT PROCESSING	U.C. per LS	NRPE	1.00	0	\$0	\$0	0	\$0	33498 \$33,498
Memo:	This allowance is a provision for level of effort support provided for text processing. It is reflective of 1040 hours effort.	U.C. per LS	NRPE	1.00	0	\$0	\$0	0	\$0	33498 \$33,498
NRPE	GRAPHICS	U.C. per LS	NRPE	1.00	0	\$0	\$0	0	\$0	7694 \$7,694
Memo:	This allowance is a provision for level of effort support provided for graphics. It is reflective of 160 hours effort.	U.C. per LS	NRPB	1.00	0	\$0	\$0	0	\$0	7694 \$7,694
NRPB	PHOTO & VIDEO	U.C. per LS	NRPA	1.00	0	\$0	\$0	0	\$0	7434 \$7,434
Memo:	This allowance is a provision for level of effort support provided for video. It is reflective of 160 hours effort.	U.C. per LS	NRPA	1.00	0	\$0	\$0	0	\$0	7434 \$7,434
NRPA	PRINTING (REPLACES P16)	U.C. per LS	NRPA	1.00	0	\$0	\$0	0	\$0	7005 \$7,005
Memo:	This allowance is a provision for level of effort support provided for printing. It is reflective of 160 hours effort.	U.C. per LS	NRPA	1.00	0	\$0	\$0	0	\$0	7005 \$7,005
Subtotal						\$1,159,591	\$0	\$0	\$0	\$1,326,222
Sales Tax						\$0	\$0	\$0	\$0	\$0
INEEL/Subcontractor Overheads						\$132,193	\$0	\$0	\$0	\$132,193
Subtotal Estimate										
Escalation										
Contingency										
--Total 06.03.01 Remedial Action PM During FY-06						\$1,800,424	\$0	\$0	\$0	\$2,032,666
<u>06.03.02</u>	<u>Remedial Action PM During FY-06</u>	U.C. per WEEK	A14	40	A14	1396.767	0	0	0	1396.767
A14	SECRETARIAL	BBW-A	BBW-A	52.00	2,080	\$34.92	\$72,632	\$0	\$0	\$72,632
E03	CHEMICAL ENGINEERING	BBW-A	U.C. per WEEK	52.00	40	E03	3728.624	0	0	3728.524
E06	ELECTRICAL ENGINEERING	BBW-A	U.C. per WEEK	13.00	40	E06	3251.998	0	0	3251.998
E11	MECHANICAL ENGINEERING	BBW-A	U.C. per WEEK	26.00	520	\$81.30	\$42,276	\$0	\$0	\$42,276
E08	ENVIRONMENTAL ENGINEERING	BBW-A	U.C. per WEEK	52.00	40	E11	3257.766	0	0	3257.766
E17	QUALITY ENGINEERING	BBW-A	U.C. per WEEK	26.00	1,040	\$81.44	\$84,702	\$0	\$0	\$84,702

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs.</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
E18	05.03.02 Remedial Action PM During FY-06 BBWI-A	U.C. per WEEK	40	E18	2959.268 \$76,941	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2559.268 \$76,941
E19	RADIOLOGICAL ENGINEERING BBWI-A	U.C. per WEEK	40	E19	3074.15 \$79,928	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	3074.15 \$79,928
F22	SAFETY ENGINEERING BBWI-A	U.C. per WEEK	40	F22	2815 \$9,869	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2815 \$9,869
F23	COST ESTIMATING BBWI-A	U.C. per WEEK	40	F23	2467.285 \$9,869	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2467.285 \$9,869
P21	SHIPPING, HAZARDOUS MATERIALS BBWI-A	U.C. per WEEK	40	P21	2594.702 \$67,462	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2594.702 \$67,462
P44	SUBCONTRACT ADMIN BBWI-A	U.C. per WEEK	40	P44	2399.92 \$62,398	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2399.92 \$62,398
S21	REGULATORY COMPLIANCE - ENVIRONMENTAL BBWI-A	U.C. per WEEK	40	S21	3134.194 \$81,489	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	3134.194 \$81,489
X16	PLANNING AND CONTROLS BBWI-A	U.C. per WEEK	40	X16	2751.407 \$71,537	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2751.407 \$71,537
NR4M	DOCUMENT CONTROL MIXED/HAZARDOUS WASTE MANAGEMENT	U.C. per LS	1.00	NR4M	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	24149 \$24,149
NRPR	RECORDS MANAGEMENT MEMO: This allowance is a provision for level of effort support provided for document control. It is reflective of 520 hours effort.	U.C. per LS	1.00	NRPR	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	26062 \$26,062
NRPG	WRITER/EDITOR MEMO: This allowance is a provision for level of effort support provided for records management. It is reflective of 520 hours effort.	U.C. per LS	1.00	NRPG	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	60789 \$60,789
NRPF	TEXT PROCESSING MEMO: This allowance is a provision for level of effort support provided for text processing. It is reflective of 1040 hours effort.	U.C. per LS	1.00	NRPF	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	33498 \$33,498
NRPE	GRAPHICS MEMO: This allowance is a provision for level of effort support provided for graphics. It is reflective of 160 hours effort.	U.C. per LS	1.00	NRPE	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	7694 \$7,694
NRPB	PHOTO & VIDEO MEMO: This allowance is a provision for level of effort support provided for video. It is reflective of 160 hours effort.	U.C. per LS	1.00	NRPB	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	7434 \$7,434

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
<u>06.03.02</u>	<u>Remedial Action PM During FY-06</u>	U.C. per LS	1.00	0	NRPA	\$0	0	0	\$0	0	7005
NRPA	PRINTING (REPLACES P16)										7005
Memo:	This allowance is a provision for level of effort support provided for printing.										\$7,005
	It is reflective of 160 hours effort.										
Subtotal						\$1,159.591	\$0	\$0	\$0	\$166.631	\$1,326.222
Sales Tax						\$0	\$0	\$0	\$0	\$0	\$0
INEEL/Subcontractor Overheads	9.97%					\$132.193	\$0	\$0	\$0	\$0	\$132.193
Subtotal Estimate											
Escalation											
Contingency											
--Total	06.03.02 Remedial Action PM During FY-06		16,280			\$1,863.710	\$0	\$0	\$0	\$239.115	\$2,092.826
06.04.01.01 M&O CONTRACTOR SUPPORT DURING MOCKUP PHASE (6-DAY WEEK)											
BBW-C	CONSTRUCTION SUBCONTRACT TECHNICAL REP	U.C. per WEEK	40	F27	\$95.52	\$25,981	0	0	0	0	3820.8
BBW-A	RADIOLOGICAL CONTROL TECH	U.C. per WEEK	6.80	272	U60	2052.601	0	0	0	0	\$25,981
BBW-C	CONSTRUCTION COORDINATOR	U.C. per WEEK	6.80	272	\$51.32	\$13,958	\$0	\$0	\$0	\$0	2052.601
BBW-C	CONSTRUCTION FIELD ENGINEER	U.C. per WEEK	6.80	8	F25	849.279	0	0	0	0	\$13,958
WORK PLANNING	BBW-A	U.C. per WEEK	6.80	61	\$58.05	\$3,553	\$0	\$0	\$0	\$0	549.279
QUALITY ENGINEERING	BBW-A	U.C. per WEEK	6.80	20	E17	1488.568	0	0	0	0	5,775
SAFETY ENGINEERING	BBW-A	U.C. per WEEK	6.80	136	\$74.43	\$10,122	\$0	\$0	\$0	\$0	661.56
INDUSTRIAL HYGIENE	BBW-A	U.C. per WEEK	6.80	54	S08	567.112	0	0	0	0	4,499
SUBCONTRACT ADMIN	BBW-A	U.C. per WEEK	6.80	10	P21	522.493	0	0	0	0	522.493
ENVIRONMENTAL ENGINEERING	BBW-A	U.C. per WEEK	6.80	68	\$64.87	\$10,452	\$0	\$0	\$0	\$0	\$3,553
SECRETARIAL	BBW-A	U.C. per WEEK	6.80	8	E08	1537.075	0	0	0	0	1488.568
RADIOLOGICAL ENGINEERING	BBW-A	U.C. per WEEK	6.80	54	\$79.75	\$10,452	\$0	\$0	\$0	\$0	\$10,122

INEEL

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Estimating Services Department

Material Costs where applicable include Idaho State Sales Tax
 Page No. 4

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs.</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
<u>05.04.01.01 M&O CONTRACTOR SUPPORT DURING MOCKUP PHASE (6-DAY WEEK)</u>		<u>BBW/A</u>	<u>U.C. per WEEK</u>	<u>10</u>	<u>T15</u>	<u>\$45.66</u>	<u>456.619</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>456.619</u>
ENVIRONFIELD TECH		BBW/A	U.C. per WEEK	6.80	68	\$45.66	\$3,105	\$0	\$0	\$0	\$3,105
ENVIRONMENTAL RESTORATION		BBW/A	U.C. per WEEK	6.80	14	\$64.71	129.416	0	0	0	129.416
PROJECT ENGINEER		BBW/A	U.C. per WEEK	6.80	2	X12	\$880	\$0	\$0	\$0	\$880
DESIGN		BBW/A	U.C. per WEEK	6.80	10	E34	193.59	0	0	0	193.59
REGULATORY COMPLIANCE - ENVIRONMENTAL		BBW/A	U.C. per WEEK	6.80	68	E05	839.74	0	0	0	\$1,316
SYSTEMS ENGINEERING		BBW/A	U.C. per WEEK	6.80	2	S21	156.71	0	0	0	839.74
						\$83.97	\$5,710	\$0	\$0	\$0	\$5,710
						\$78.36	\$1,066	\$0	\$0	\$0	156.71
						\$85.52	\$171.031	0	0	0	\$1,066
						\$1.163	\$0	\$0	\$0	0	171.031
										\$0	\$1,163
Subtotal Sales Tax INEEL/Subcontractor Overheads											
Subtotal Estimate Escalation Contingency											
Total 05.04.01.01 M&O CONTRACTOR SUPPORT DURING MOCKUP PHASE (6-DAY WEEK)				1,476		\$244,035	\$0	\$0	\$0	\$0	\$244,035
<u>05.04.02 M&O CONTRACTOR SUPPORT DURING SITE MOB & SET-UP</u>		<u>BBW/C</u>	<u>U.C. per WEEK</u>								
CONSTRUCTION SUBCONTRACT TECHNICAL REP		BBW/C	U.C. per WEEK	7.25	40	F27	3820.8	0	0	0	3820.8
RADIOLOGICAL CONTROL TECH		BBW/A	U.C. per WEEK	7.25	290	\$95.52	\$27,701	\$0	\$0	\$0	\$27,701
CONSTRUCTION COORDINATOR		BBW/C	U.C. per WEEK	7.25	20	U60	1026.301	0	0	0	1026.301
CONSTRUCTION FIELD ENGINEER		BBW/C	U.C. per WEEK	7.25	145	\$51.32	\$7,441	\$0	\$0	\$0	\$7,441
WORK PLANNING		BBW/A	U.C. per WEEK	7.25	8	F25	849.28	0	0	0	849.28
QUALITY ENGINEERING		BBW/A	U.C. per WEEK	7.25	6	F26	661.56	0	0	0	661.56
SAFETY ENGINEERING		BBW/A	U.C. per WEEK	7.25	44	\$110.26	\$4,796	\$0	\$0	\$0	\$4,796
						\$58.05	\$222.492	0	0	0	522.492
						\$3,788	\$0	\$0	\$0	\$0	\$3,788

**DETAIL ITEM REPORT
STABILIZATION**

Project Name: WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION
Revision to Previous TPC Estimate 6304
Project Location: INEEL - TAN

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEI - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Support During 24-Hour Oxidation Process</u>	<u>Qty</u>	<u>Hrs.</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.01 M&O CONTRACTOR	BBWI-A	U.C. per WEEK	7.60	1,277	U60	\$51.32	8620.928	0	0	0	0	8620.928 \$65,519
RADIOLOGICAL CONTROL TECH (24 HOUR COVERAGE)	BBWI-A	U.C. per WEEK	7.60	10	T15	\$45.66	456.62	0	0	0	0	456.62 \$3,470
ENVIRON/FIELD TECH	BBWI-C	U.C. per WEEK	7.60	76	F26	\$110.26	661.561	0	0	0	0	661.561 \$5,028
CONSTRUCTION COORDINATOR	BBWI-C	U.C. per WEEK	7.60	8	F25	\$106.16	849.28	0	0	0	0	849.28 \$6,455
CONSTRUCTION FIELD ENGINEER	BBWI-C	U.C. per WEEK	7.60	6	F10	\$58.05	522.493	0	0	0	0	522.493 \$3,971
WORK PLANNING	BBWI-A	U.C. per WEEK	7.60	9	S08	\$3,971	0	0	0	0	0	\$0
QUALITY ENGINEERING	BBWI-A	U.C. per WEEK	7.60	20	E17	\$74.43	1488.567	0	0	0	0	1488.567 \$11,313
SAFETY ENGINEERING	BBWI-A	U.C. per WEEK	7.60	20	E19	\$76.85	1537.075	0	0	0	0	1537.075 \$11,682
INDUSTRIAL HYGIENE	BBWI-A	U.C. per WEEK	7.60	8	S08	\$70.89	567.112	0	0	0	0	567.112 \$4,310
SUBCONTRACT ADMIN	BBWI-A	U.C. per WEEK	7.60	10	P21	\$64.87	648.675	0	0	0	0	648.675 \$4,930
ENVIRONMENTAL ENGINEERING	BBWI-A	U.C. per WEEK	7.60	8	E08	\$79.75	637.995	0	0	0	0	637.995 \$4,849
SECRETARIAL	BBWI-A	U.C. per WEEK	7.60	10	A14	\$34.92	349.192	0	0	0	0	349.192 \$2,654
RADIOLOGICAL ENGINEERING	BBWI-A	U.C. per WEEK	7.60	61	E18	\$73.98	739.817	0	0	0	0	739.817 \$5,623
ENVIRONMENTAL RESTORATION	BBWI-A	U.C. per WEEK	7.60	76	X12	\$64.71	129.417	0	0	0	0	129.417 \$984
PROJECT ENGINEER	BBWI-A	U.C. per WEEK	7.60	2	E34	\$96.79	193.589	0	0	0	0	193.589 \$1,471
DESIGN	BBWI-A	U.C. per WEEK	7.60	10	E05	\$83.97	839.739	0	0	0	0	839.739 \$6,382
REGULATORY COMPLIANCE - ENVIRONMENTAL	BBWI-A	U.C. per WEEK	7.60	2	S21	\$78.35	156.709	0	0	0	0	156.709 \$1,191
SYSTEMS ENGINEERING	BBWI-A	U.C. per WEEK	7.60	2	E24	\$85.52	171.032	0	0	0	0	171.032 \$1,300

DETAL ITEM REPORT
WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION

Project Name: WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION
REVISION TO PREVIOUS TPC ESTIMATE 6304

Project location: INEEF TAN
Organization: INEEF TAN
Address: 1000 ELMWOOD AVENUE

Project Location: NEWEL-TAN

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Support During 24-Hour Oxidation Process</u>	<u>Qty</u>	<u>Hrs.</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
<u>05.04.01.03 M&O CONTRACTOR SUPPORT DURING 24-HOUR OXIDATION PROCESS</u>												
CCTV - Set-up of Equipment	BBW-A	U.C. per WEEK	7.60	3	23	E38	\$81.33	243.98 \$,854	0 \$0	0 \$0	0 \$0	243.98 \$1,854
CCTV - Equipment operation	BBW-A	U.C. per WEEK	7.60	10	76	E38	\$81.33	813.267 \$6,181	0 \$0	0 \$0	0 \$0	813.267 \$6,181
CCTV - Removal of Equipment	BBW-A	U.C. per WEEK	7.60	3	23	E38	\$81.33	243.98 \$,854	0 \$0	0 \$0	0 \$0	243.98 \$1,854
CCTV - Voice-over and editing	BBW-A	U.C. per WEEK	7.60	2	15	E38	\$81.33	166.654 \$1,236	0 \$0	0 \$0	0 \$0	162.654 \$1,236
CCTV - Camera (Pan/Tilt/Zoom capable)		U.C. per lot	1.00	0			\$0	0 \$0	2000 \$2,000	0 \$0	0 \$0	2000 \$2,000
Subtotal								\$274,216 \$41,605	0 \$0	\$2,000 \$0	\$0 \$0	\$276,216 \$44,605
Sales Tax								\$0 \$0	\$120 \$0	\$0 \$0	\$0 \$0	\$120 \$0
INEEL/Subcontractor Overheads								\$36,664 \$274,591	0 \$0	\$244 \$1,826	\$0 \$0	\$36,908 \$276,417
Subtotal Estimate												\$320,941
Escalation												
Contingency												
-- Total 05.04.01.03 M&O CONTRACTOR SUPPORT DURING 24-HOUR OXIDATION PROCESS				3,732				\$630,977	\$0	\$4,190	\$0	\$634,266
<u>05.04.01.04 M&O CONTRACTOR SUPPORT DURING WASTE DISPOSAL & PROCESS DEMOB</u>												
CONSTRUCTION SUBCONTRACT TECHNICAL REP	BBW-C	U.C. per WEEK	6.25	40	250	F27	\$95.52	3620.8 \$25,880	0 \$0	0 \$0	0 \$0	3820.8 \$23,880
RADIOLOGICAL CONTROL TECH	BBW-A	U.C. per WEEK	6.25	40	250	U60	\$51.32	2052.602 \$12,829	0 \$0	0 \$0	0 \$0	2052.602 \$12,829
CONSTRUCTION COORDINATOR	BBW-C	U.C. per WEEK	6.25	8	50	F25	\$106.16	849.28 \$5,308	0 \$0	0 \$0	0 \$0	849.28 \$5,308
CONSTRUCTION FIELD ENGINEER	BBW-C	U.C. per WEEK	6.25	6	38	F26	\$110.26	661.56 \$4,135	0 \$0	0 \$0	0 \$0	661.56 \$4,135
WORK PLANNING	BBW-A	U.C. per WEEK	6.25	9	56	F10	\$58.06	522.493 \$3,266	0 \$0	0 \$0	0 \$0	522.493 \$3,266
QUALITY ENGINEERING	BBW-A	U.C. per WEEK	6.25	20	125	E17	\$74.43	1488.568 \$6,304	0 \$0	0 \$0	0 \$0	1488.568 \$9,304
SAFETY ENGINEERING	BBW-A	U.C. per WEEK	6.25	20	125	E19	\$76.85	1537.075 \$9,607	0 \$0	0 \$0	0 \$0	1537.075 \$9,607
INDUSTRIAL HYGIENE	BBW-A	U.C. per WEEK	6.25	8	50	S08	\$70.89	567.112 \$3,544	0 \$0	0 \$0	0 \$0	567.112 \$3,544

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Estimating Services Department

Material Costs where applicable include Idaho State Sales Tax
Page No. 8

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>M&O CONTRACTOR SUPPORT DURING WASTE DISPOSAL & PROCESS DEMOB</u>	<u>Hrs.</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.01.04	M&O CONTRACTOR SUPPORT DURING WASTE DISPOSAL & PROCESS DEMOB	BBWI-A	U.C. per WEEK	10	63	P21 \$64.87	648.675 \$4,054	0 \$0	0 \$0	0 \$0	648.675 \$4,054
SUBCONTRACT ADMIN		BBWI-A	U.C. per WEEK	6.25	8	E08 \$79.75	637.995 \$3,987	0 \$0	0 \$0	0 \$0	637.995 \$3,987
ENVIRONMENTAL ENGINEERING		BBWI-A	U.C. per WEEK	6.25	50	A14 \$34.92	349.192 \$2,182	0 \$0	0 \$0	0 \$0	349.192 \$2,182
SECRETARIAL		BBWI-A	U.C. per WEEK	6.25	10	E18 \$73.98	739.818 \$4,624	0 \$0	0 \$0	0 \$0	739.818 \$4,624
RADIOLOGICAL ENGINEERING		BBWI-A	U.C. per WEEK	6.25	63	X12 \$64.71	129.416 \$809	0 \$0	0 \$0	0 \$0	129.416 \$809
ENVIRON/FIELD TECH		BBWI-A	U.C. per WEEK	6.25	63	T15 \$45.66	456.619 \$2,854	0 \$0	0 \$0	0 \$0	456.619 \$2,854
ENVIRONMENTAL RESTORATION		BBWI-A	U.C. per WEEK	6.25	2	X12 \$64.71	129.416 \$809	0 \$0	0 \$0	0 \$0	129.416 \$809
PROJECT ENGINEER		BBWI-A	U.C. per WEEK	6.25	13	E34 \$96.80	193.59 \$1,210	0 \$0	0 \$0	0 \$0	193.59 \$1,210
DESIGN		BBWI-A	U.C. per WEEK	6.25	10	E05 \$83.97	839.739 \$5,248	0 \$0	0 \$0	0 \$0	839.739 \$5,248
REGULATORY COMPLIANCE - ENVIRONMENTAL		BBWI-A	U.C. per WEEK	6.25	2	S21 \$78.36	156.71 \$979	0 \$0	0 \$0	0 \$0	156.71 \$979
SYSTEMS ENGINEERING		BBWI-A	U.C. per WEEK	6.25	13	E24 \$85.52	171.032 \$1,069	0 \$0	0 \$0	0 \$0	171.032 \$1,069
Subtotal Sales Tax INEEEL/Subcontractor Overheads						\$98,889 \$0 \$14,606	\$0 \$0 \$0	\$0 \$0 \$0	\$0 \$0 \$0	\$0 \$0 \$0	\$98,889 \$0 \$14,606
Subtotal Estimate Escalation Contingency						14.77%					
-- Total 05.04.01.04 M&O CONTRACTOR SUPPORT DURING WASTE DISPOSAL & PROCESS DEMOB						1,356	\$224,287	\$0	\$0	\$0	\$224,297
05.04.01.05	M&O CONTRACTOR SUPPORT DURING TANK REMOVAL/SITE RESTORATION	BBWI-C	U.C. per WEEK	40	650	F27 \$95.52	3820.8 \$52,088	0 \$0	0 \$0	0 \$0	3820.8 \$52,088
CONSTRUCTION SUBCONTRACT TECHNICAL REP		BBWI-A	U.C. per WEEK	16.25	40	U60 \$51.32	2052.602 \$33,355	0 \$0	0 \$0	0 \$0	2052.602 \$33,355
RADIOLOGICAL CONTROL TECH		BBWI-C	U.C. per WEEK	16.25	8	F25 \$106.16	849.28 \$13,801	0 \$0	0 \$0	0 \$0	849.28 \$13,801
CONSTRUCTION COORDINATOR											

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Revision to Previous TPC Estimate 6304

Project Location: **INEEL - TAN**

Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Support During Tank Removal</u>	<u>Site Restoration</u>	<u>Hrs.</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.01.05 M&O CONTRACTOR SUPPORT												
	BBW-M-C	U.C. per WEEK	F26	661.56	0	\$0	0	0	0	0	0	661.56
	CONSTRUCTION FIELD ENGINEER	U.C. per WEEK	16.25	\$110.26	\$10,750	\$0	\$0	\$0	\$0	\$0	\$0	\$10,750
	BBW-M-A	U.C. per WEEK	9	F10	522.493	0	0	0	0	0	0	522.493
	WORK PLANNING	U.C. per WEEK	16.25	\$58.05	\$8,491	\$0	\$0	\$0	\$0	\$0	\$0	\$8,491
	BBW-M-A	U.C. per WEEK	20	E17	1488.567	0	0	0	0	0	0	1488.567
	BBW-M-A	U.C. per WEEK	16.25	\$74.43	\$24,189	\$0	\$0	\$0	\$0	\$0	\$0	\$24,189
	QUALITY ENGINEERING	U.C. per WEEK	20	E19	1537.075	0	0	0	0	0	0	1537.075
	SAFETY ENGINEERING	U.C. per WEEK	16.25	\$76.85	\$24,977	\$0	\$0	\$0	\$0	\$0	\$0	\$24,977
	BBW-M-A	U.C. per WEEK	8	S08	567.111	0	0	0	0	0	0	567.111
	INDUSTRIAL HYGIENE	U.C. per WEEK	16.25	\$70.89	\$9,216	\$0	\$0	\$0	\$0	\$0	\$0	\$9,216
	BBW-M-A	U.C. per WEEK	10	P21	648.676	0	0	0	0	0	0	648.676
	SUBCONTRACT ADMIN	U.C. per WEEK	16.25	\$64.87	\$10,541	\$0	\$0	\$0	\$0	\$0	\$0	\$10,541
	BBW-M-A	U.C. per WEEK	8	E08	637.994	0	0	0	0	0	0	637.994
	ENVIRONMENTAL ENGINEERING	U.C. per WEEK	16.25	\$79.75	\$10,367	\$0	\$0	\$0	\$0	\$0	\$0	\$10,367
	BBW-M-A	U.C. per WEEK	10	A14	349.192	0	0	0	0	0	0	349.192
	SECRETARIAL	U.C. per WEEK	16.25	\$34.92	\$5,674	\$0	\$0	\$0	\$0	\$0	\$0	\$5,674
	BBW-M-A	U.C. per WEEK	10	E18	739.817	0	0	0	0	0	0	739.817
	RADIOLOGICAL ENGINEERING	U.C. per WEEK	16.25	\$73.98	\$12,022	\$0	\$0	\$0	\$0	\$0	\$0	\$12,022
	BBW-M-A	U.C. per WEEK	10	T15	456.62	0	0	0	0	0	0	456.62
	ENVIRONFIELD TECH	U.C. per WEEK	16.25	\$45.66	\$7,420	\$0	\$0	\$0	\$0	\$0	\$0	\$7,420
	BBW-M-A	U.C. per WEEK	2	X12	129.417	0	0	0	0	0	0	129.417
	ENVIRONMENTAL RESTORATION	U.C. per WEEK	16.25	\$64.71	\$2,103	\$0	\$0	\$0	\$0	\$0	\$0	\$2,103
	BBW-M-A	U.C. per WEEK	2	E34	193.59	0	0	0	0	0	0	193.59
	PROJECT ENGINEER	U.C. per WEEK	16.25	\$96.80	\$3,146	\$0	\$0	\$0	\$0	\$0	\$0	\$3,146
	BBW-M-A	U.C. per WEEK	10	E05	839.799	\$0	0	0	0	\$0	\$0	839.799
	DESIGN	U.C. per WEEK	16.25	\$83.97	\$13,646	\$0	\$0	\$0	\$0	\$0	\$0	\$13,646
	BBW-M-A	U.C. per WEEK	2	S21	156.71	0	0	0	0	\$0	\$0	156.71
	REGULATORY COMPLIANCE - ENVIRONMENTAL	U.C. per WEEK	33	\$78.35	\$2,547	\$0	\$0	\$0	\$0	\$0	\$0	\$2,547

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INNEEL - TAN**
 Estimate Number: **6304-A**

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

DETAIL ITEM REPORT

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>QTY</u>	<u>U.C. per WEEK</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.01.05 M&O CONTRACTOR SUPPORT DURING TANK REMOVAL/SITE RESTORATION		BBWA										
Subtotal												
Sales Tax												
INNEEL/Subcontractor Overheads	14.77%											
Subtotal Estimate												
Escalation												
Contingency												
-- Total 05.04.01.05 M&O CONTRACTOR SUPPORT DURING TANK REMOVAL/SITE RESTORATION												
05.04.02.01.01 SUBCONTRACTOR ENGINEERING/SUBMITTALS		SC1										
Subtotal												
Sales Tax												
INNEEL/Subcontractor Overheads	26.00%											
Subtotal Estimate												
Escalation												
Contingency												
-- Total 05.04.02.01.01 SUBCONTRACTOR ENGINEERING/SUBMITTALS												
05.04.02.01.02 SURGE & EXTRACTION SYSTEM		SC1										
Subtotal												
Sales Tax												
INNEEL/Subcontractor Overheads	26.00%											
Subtotal Estimate												
Escalation												
Contingency												
-- Total 05.04.02.01.02 SURGE & EXTRACTION SYSTEM												
05.04.02.02 CHEMICAL FEED SYSTEMS		SC1										
Subtotal												
Sales Tax												
INNEEL/Subcontractor Overheads	26.00%											
Subtotal Estimate												
Escalation												
Contingency												
-- Total 05.04.02.02 CHEMICAL FEED SYSTEMS												
NaOH Feed/Makeup Tank												
INNEEL												

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Revision To Previous TPC Estimate 6304
 Project Location: INEEL - TAN
 Estimate Number: 6304-A

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Cty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.02 CHEMICAL FEED SYSTEMS											
	SC1	U.C. per EACH	40	40	CN-OS \$25.00	\$1,000	0	2500	0	0	3500
	NaOH Feed/Makeup Tank Agitator		1.00					\$2,500	\$0	\$0	\$3,500
	SC1	U.C. per EACH	80	80	CN-OS \$25.00	2000	0	23000	0	0	25000
	Sodium Persulfate Feed/Makeup Tank		1.00			\$2,000		\$23,000	\$0	\$0	\$25,000
	SC1	U.C. per EACH	40	40	CN-OS \$25.00	10000	0	9500	0	0	10500
	Sodium Persulfate Feed/Makeup Tank Agitator		1.00			\$1,000		\$9,500	\$0	\$0	\$10,500
	SC1	U.C. per SET	60	120	CN-OS \$25.00	1500	0	12500	0	0	14000
	Instruments & Controls		2.00			\$3,000		\$25,000	\$0	\$0	\$28,000
	SC1	U.C. per ALLOW	320	320	CN-OS \$25.00	8000	0	100000	0	0	108000
	BULK STORAGE & DELIVERY SYSTEM ALLOWANCE		1.00			\$8,000		\$100,000	\$0	\$0	\$108,000
	Subtotal							\$16,250	\$0	\$0	\$161,750
	Sales Tax							\$0	\$0	\$0	\$0
	INEEL/Subcontractor Overheads							\$0	\$0	\$0	\$9,930
								\$4,225	\$0	\$0	\$49,837
	Subtotal Estimate							\$2,355	\$0	\$0	\$241,517
	Escalation							\$12,633	\$0	\$0	\$27,774
	Contingency								\$0	\$0	\$149,009
	-- Total 06.04.02.02 CHEMICAL FEED SYSTEMS		650		\$35,482	\$0	\$382,838	\$0	\$0	\$0	\$418,300
05.04.02.01.02 CHEMICAL OXIDATION & GROUTING SYSTEM											
	SC1	U.C. per EACH	150	300	CN-OS \$25.00	3750	0	80000	0	0	83750
	500 Gallon Glass-Lined Reactor Vessels With Mixing Systems		2.00			\$7,500		\$160,000	\$0	\$0	\$167,500
	Memo:	Price each is per a Pfaudler, Inc. 4/25/03 quotation for \$65,000 excluding tax & freight, with a \$5,400 adder per Dan Wendt of BBWI for custom features not quoted.									
	SC1	U.C. per LOAD	1.00	0		\$0	0	6250	0	0	6250
	Freight For Reactor Vessels							\$6,250	\$0	\$0	\$6,250
	Memo:	Assume approx 2,500 miles at \$2.50/loaded mile for a single trailer load.									
	SC1	U.C. per SET	2.00	60	CN-OS \$25.00	1500	0	12500	0	0	14000
	Reactor Vessel Instruments & Controls					\$3,000		\$25,000	\$0	\$0	\$28,000
	SC1	U.C. per EACH	2.00	0	CN-OS \$0	0	0	1500	0	0	1500
	Rad Shielding Allowance							\$3,000	\$0	\$0	\$3,000
	SC1	U.C. per EACH	1.00	25	CN-OS \$25.00	625	0	28000	0	0	28625
	Grout Mixer/Extruder					\$625		\$28,000	\$0	\$0	\$28,625
	Memo:	Material cost per D. Cresap.									
	SC1	U.C. per EACH	1.00	320	CN-OS \$25.00	8000	0	8000	0	0	16000
	Allowance For Equipment Suppls and Process Containment					\$8,000		\$0	\$0	\$0	\$16,000

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INNEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.02.03 CHEMICAL OXIDATION & GROUTING SYSTEM											
	SC1	U.C. per LS	1.00	200	CN-OS \$25.00	5000 \$5,000	0 \$0	10000 \$10,000	0 \$0	0 \$0	15000 \$15,000
	Allowance For Piping, Valves & Process Connections										
	SC1	U.C. per SET	1.00	60	CN-OS \$25.00	1500 \$6,000	0 \$0	12500 \$50,000	0 \$0	0 \$0	14000 \$56,000
	Instruments & Controls For V-Tanks										
	SC1	U.C. per SYSTEM	4.00	240	CN-OS \$25.00	2000 \$2,000	0 \$0	2000 \$2,000	0 \$0	0 \$0	4000 \$4,000
	Electrical Conduit, Wire and Disconnect Inside Containment										
	SC1	U.C. per EACH	1.00	80	CN-OS \$25.00	0 \$0	0 \$0	4000 \$4,000	0 \$0	0 \$0	4000 \$4,000
	Bulk Grout Hopper										
	SC1	U.C. per EACH	1.00	0		0 \$0	0 \$0	4000 \$4,000	0 \$0	0 \$0	4000 \$4,000
	Grout Conveyor										
	SC1	U.C. per EACH	1.00	0		0 \$0	0 \$0	2500 \$2,500	0 \$0	0 \$0	2500 \$2,500
	Incoming Freight Allowance										
	SC1	U.C. per allow	1.00	0		0 \$0	0 \$0	5000 \$5,000	0 \$0	0 \$0	5000 \$5,000
	Memo: Assume approx. 2,500 miles at \$2.50/loaded mile for a single trailer load.										
	SC1	U.C. per allow	1.00	0		0 \$0	0 \$0	5000 \$5,000	0 \$0	0 \$0	5000 \$5,000
	Chillers 10 ton closed loop glycol										
	SC1	U.C. per EACH	2.00	0		0 \$0	0 \$0	30000 \$50,000	0 \$0	0 \$0	30000 \$60,000
	Subtotal										
	Sales Tax										
	INNEEL/Subcontractor Overheads										
			26.00%								
	Subtotal Estimate										
	Escalation										
	Contingency										
	--Total 05.04.02.01.02.03 CHEMICAL OXIDATION & GROUTING SYSTEM			1,286		\$76,050	\$0	\$89,199	\$0	\$0	\$97,249
	05.04.02.01.02.04 OFF GAS SYSTEM										
	Condenser	SC1	U.C. per EACH	1.00	15	CN-OS \$25.00	375 \$375	0 \$0	5000 \$5,000	0 \$0	0 \$0
		SC1	U.C. per EACH	1.00	40	CN-OS \$25.00	1000 \$1,000	0 \$0	750 \$750	0 \$0	0 \$0
	Temporary Water Supply To Condenser										
	Memo: Assume water source will be available from an existing source at TAN.										
	SC1	U.C. per EACH	1.00	15	CN-OS \$25.00	375 \$375	0 \$0	2500 \$2,500	0 \$0	0 \$0	2875 \$2,875
	Metal Filter (SST Screen Filter In Housing)										
	SC1	U.C. per EACH	1.00	15	CN-OS \$25.00	375 \$375	0 \$0	1000 \$1,000	0 \$0	0 \$0	1375 \$1,375
	Off-Gas Reheater										
	SC1	U.C. per EACH	1.00	20	CN-OS \$25.00	500 \$500	0 \$0	5125 \$5,125	0 \$0	0 \$0	5625 \$5,625
	Surge Tank CS										

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Revision To Previous TPC Estimate 6304

Project Location: **INEE - TAN**

Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.02.04 OFF GAS SYSTEM											
SC1	Allowance For Piping, Valves and Equipment Connections CS	U.C. per LS	1.00	60	CN-OS \$25.00	1500	0	2000	0	0	3500 \$3,500
SC1	High Integrity Container (HIC) For Off-Gas Liquids	U.C. per EACH	1.00	0	CN-OS	0	0	4000	0	0	4000 \$4,000
SC1	Spill Containment For Filling Off-Gas HICs	U.C. per EACH	1.00	0	CN-OS	0	0	1000	0	0	1000 \$1,000
SC1	Flow Controls (Based On 12% Of Equipment Costs)	U.C. per EACH	1.00	0	CN-OS	0	0	2565	0	0	2565 \$2,565
SC1	Equipment Skid	U.C. per EACH	1.00	40	CN-OS \$25.00	1000	0	1000	0	0	2000 \$2,000
SC1	Allowance For Electrical Connections/Disconnects	U.C. per EACH	1.00	40	CN-OS	1000	0	1000	0	0	2000 \$2,000
Subtotal						\$6,125	\$0	\$25,940	\$0	\$0	\$32,065
Sales Tax						\$0	\$1,556	\$0	\$0	\$0	\$1,556
INEE/Subcontractor Overheads			26.00%			\$1,593	\$0	\$7,149	\$0	\$0	\$8,742 \$20,962
Subtotal Estimate						\$868	\$0	\$3,984	\$0	\$0	\$42,363
Escalation						\$3,819	\$0	\$17,143	\$0	\$0	\$4,872
Contingency											\$68,197 \$20,962
--- Total 05.04.02.01.02.04 OFF GAS SYSTEM						\$12,424	\$0	\$55,773	\$0	\$0	\$68,197
05.04.02.01.02.05 EXHAUST SYSTEM											
SC1	HEPA Filter Train	U.C. per EACH	2.00	0	CN-OS	0	0	30000	0	0	30000 \$60,000
SC1	S-GAC Filter (Charcoal)	U.C. per EACH	2.00	0	CN-OS	0	0	2500	0	0	2500 \$5,000
SC1	Blower	U.C. per EACH	2.00	0	CN-OS	0	0	2000	0	0	2000 \$4,000
SC1	Allowance For Ducting, Dampers and Equipment Connections	U.C. per LS	1.00	0	CN-OS	0	0	3000	0	0	3000 \$3,000
Memo: Assume no radiation monitoring of discharge air. Assume discharge air is vented to atmosphere no higher than 10' above ground level. Will alarm on differential pressure settings.											
SC1	Flow Controls (Based On 12% Of Material Costs)	U.C. per EACH	1.00	0	CN-OS	0	0	8280	0	0	8280 \$8,280
SC1	Allowance For Electrical Connections & Disconnects	U.C. per SKID	1.00	40	CN-OS \$25.00	1000	0	2500	0	0	3500 \$3,500

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Revision To Previous TPC Estimate 6304
 Project Location: **INEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.02.05 EXHAUST SYSTEM		SC1	U.C. per EACH	1.00	80	CN-OS \$25.00	2000	0	1000 \$1,000	0	3000 \$3,000
Equipment Skid							\$2,000	\$0	\$0	\$0	
Labor To Set & Connect Equipment To Skid		SC1	U.C. per EACH	1.00	80	CN-OS \$25.00	2000	0	0 \$0	0	2000 \$2,000
Air Monitoring System		SC1	U.C. per EACH	1.00	0		0	0	80000 \$80,000	0	80000 \$80,000
Subtotal							\$5,000 \$0	\$0	\$83,780 \$5,027	\$0	\$168,750 \$5,027
Sales Tax							\$0 \$0	\$0	\$0 \$20,800	\$0	\$45,190
Subtotal Estimate											
Escalation											
Contingency											
... Total 05.04.02.01.02.05 EXHAUST SYSTEM			200				\$10,142	\$0	\$180,133	\$162,270	\$0
05.04.02.01.02.04 CONTROL TRAILER		SC1	U.C. per EACH	1.00	0		0	0	40000 \$40,000	0	40000 \$40,000
Purchase Control Trailer							\$0 \$0	\$0	\$0 \$11,024	\$0	\$0 \$11,024
Subtotal							\$0 \$0	\$0	\$40,000 \$2,400	\$0	\$40,000 \$2,400
Sales Tax							\$0 \$0	\$0	\$0 \$0	\$0	\$0 \$0
INEEL/Subcontractor Overheads							\$0 \$0	\$0	\$0 \$0	\$0	\$0 \$0
Subtotal Estimate											
Escalation											
Contingency											
... Total 05.04.02.01.02.04 CONTROL TRAILER			0				\$0	\$0	\$86,003	\$0	\$0
05.04.02.01.02.05 ABOVE GROUND TEMPORARY STORAGE TANK (AGTST)		SC1	U.C. per EACH	1.00	0		0	0	10000 \$10,000	0	10000 \$10,000
Above Ground Temporary Storage Tank							\$0 \$0	\$0	\$2,756 \$0	\$0	\$0 \$0
Subtotal							\$0 \$0	\$0	\$10,000 \$600	\$0	\$10,000 \$600
Sales Tax							\$0 \$0	\$0	\$1,536 \$6,609	\$0	\$1,536 \$6,609
INEEL/Subcontractor Overheads							\$0 \$0	\$0	\$0 \$0	\$0	\$0 \$0
Subtotal Estimate											
Escalation											
Contingency											
... Total 05.04.02.01.02.05 ABOVE GROUND TEMPORARY STORAGE TANK (AGTST)			0				\$0	\$0	\$21,501	\$0	\$0

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Revision To Previous TPC Estimate 6304-A
 Project Location: **INEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
<u>05.04.02.01.02.06</u>	<u>550-GALLON POLYETHYLENE CONTAINERS (HICs)</u>	SC1	U.C. per EACH	75.00	0	\$0	0	\$50	\$0	0	550
Purchase 550-Gallon HICs								\$41,250	\$0	\$0	\$41,250
Subtotal								\$41,250	\$0	\$0	\$41,250
Sales Tax								\$2,475	\$0	\$0	\$2,475
INEEL/Subcontractor Overheads	26.00%							\$11,369	\$0	\$0	\$11,369
Subtotal Estimate Escalation Contingency											\$55,094
--- Total 05.04.02.01.02.06 550-GALLON POLYETHYLENE CONTAINERS (HICs)			0			\$0		\$88,691	\$0	\$0	\$88,691
05.04.02.01.03.01 SUBCONTRACTOR GCs DURING MOCKUP PHASE (6-DAY WEEK)											
Mobilization To I.F. Rental Facility For Mockup Phase	SC1	U.C. per LS	1.00	0	CN-OST	0	0	0	30000	0	30000
Project Manager	SC1	U.C. per WEEK	6.80	40	CN-SUPR \$40.00	1600	0	0	\$30,000	0	\$30,000
Planning & Scheduling Personnel	SC1	U.C. per WEEK	6.80	40	CN-OST	1380.8	0	0	0	0	0
Secretary	SC1	U.C. per WEEK	6.80	40	CN-OST	9,389	0	0	\$0	\$0	\$9,389
Travel Expense	SC1	U.C. per MONTH	1.60	0	CN-OST	1380.8	0	0	0	0	0
Temporary On Site Office, Storage, Change & Shower Facilities	SC1	U.C. per MONTH	1.60	0	CN-OST	34.52	0	0	2000	0	2000
Allowance For Phones	SC1	U.C. per WEEK	6.80	0	CN-OST	3,840	0	0	\$3,200	0	\$3,200
3/4 Ton 4x4 Pick-up Trucks (3 each)	SC1	U.C. per MONTH	1.60	0	CN-OST	0	0	75	0	0	75
20 Ton Hydraulic Crane	SC1	U.C. per MONTH	1.60	0	CN-OST	16,218	0	\$510	\$0	\$0	\$510
8,000 LB. Rough Terrain Forklift	SC1	U.C. per MONTH	1.60	0	CN-OST	7,635	0	0	0	0	0
Crane/Forklift Operator	SC1	U.C. per MONTH	1.60	170	CN-OST	5868.4	0	0	0	0	5868.4
						\$9,389	\$0	\$0	\$0	\$0	\$9,389

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>GCS DURING MOCKUP PHASE (6-DAY WEEK)</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Sub-contractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.03.01 SUBCONTRACTOR	SC1	U.C. per MONTH		0				0		0	\$0
Air Compressor (175 CFM Trailer Mounted)			U.C. per MONTH	1.60	0			\$2,499		\$0	\$0
40 KW Generator	SC1	U.C. per MONTH		0				1575	0	0	\$0
Memo: \$468/month for rental & \$1,106/month operating expense (based upon 165 hours/month).								\$2,520			
40 KW Backup Generator	SC1	U.C. per MONTH		1.60	0			469	0	0	\$0
Memo: \$468/month for rental, operating expense not included based on the assumption this backup unit will not be needed.								\$750			
Portable Toilets (2 each)	SC1	U.C. per WEEK		6.80	0			0		90	\$0
On Site Construction Personnel Training	SC1	U.C. per EACH		60		CN-OST		612		\$0	\$0
WORKABILITY WALKDOWN PODS etc. - 5 HR/DAY X 10 WORKERS X 4 DAY/WK	SC1	U.C. per WEEK		10.00	600	\$34.52	2071.2	0	0	0	\$0
Consumables, Small Tools, & PPE	SC1	U.C. per MONTH		1.60	0			2000	0	0	\$0
Subtotal								\$3,200			\$3,200
Sales Tax INEEEL/Subcontractor Overheads											
Subtotal Estimate											
Escalation											
Contingency											
-- Total 05.04.02.01.03.01 SUBCONTRACTOR GCS DURING MOCKUP PHASE (6-DAY WEEK)				1,824		\$130,737	\$79,180	\$15,783	\$60,860	\$0	\$286,861
05.04.02.01.03.02 SUBCONTRACTOR GCS DURING SITE MOB & SET-UP (4-DAY WEEK)											
Demobilization From I.F. Rental Facility & Mobilize At TAN	SC1	U.C. per LS		1.00	0	CN-OST	0	0	15000	0	15000
Project Manager	SC1	U.C. per WEEK		7.25	40	CN-SUPR	\$11,600	\$0	\$0	\$0	\$0
Planning & Scheduling Personnel	SC1	U.C. per WEEK		7.25	40	CN-OST	1380.8	0	0	0	1600
Secretary	SC1	U.C. per WEEK		7.25	40	CN-OST	1380.8	\$10,011	\$0	\$0	\$11,600

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Revision To Previous TPC Estimate 6304

Project Location: **INEEL - TAN**

Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
<u>05.04.02.01.03.02 SUBCONTRACTOR GCs DURING SITE MOB & SET-UP (4-DAY WEEK)</u>											
Travel Expense	SC1	U.C. per MONTH	1.70	0		\$0	0	2000	0	0	2000
Temporary On Site Office, Storage, Change & Shower Facilities	SC1	U.C. per MONTH	1.70	0		\$0	2400	0	0	0	2400
Allowance For Phones	SC1	U.C. per WEEK	7.25	0		\$0	0	75	0	0	75
3/4 Ton 4x4 Pick-up Trucks (3 each)	SC1	U.C. per MONTH	1.70	0		\$0	3484	0	0	0	3484
20 Ton Hydraulic Crane	SC1	U.C. per MONTH	1.70	0		\$0	55923	\$0	\$0	\$0	\$5,923
Crane/Forklift Operator	SC1	U.C. per MONTH	1.70	289	CN-OST	5868.4	0	0	0	0	5868.4
8,000 LB. Rough Terrain Forklift	SC1	U.C. per MONTH	1.70	0		\$0	9,976	\$0	\$0	\$0	9,976
Air Compressor (175 CFM Trailer Mounted)	SC1	U.C. per MONTH	1.70	0		\$0	10136	0	0	0	10136
40 kW Generator	SC1	U.C. per MONTH	1.70	0		\$0	17,231	\$0	\$0	\$0	17,231
Memo: \$469/month for rental & \$1,105/month operating expense (based upon 165 hours/month).											
40 kW Backup Generator	SC1	U.C. per MONTH	1.70	0		\$0	469	0	0	0	469
Memo: \$469/month for rental, operating expense not included based on the assumption this backup unit will not be needed.											
Portable Toilets (2 each)	SC1	U.C. per WEEK	7.25	0		\$0	0	90	0	0	90
WORKABILITY WALKDOWN PODs etc. - 5 HR/DAY X 10 WORKERS X 4 DAY/WK	SC1	U.C. per WEEK	7.25	20	CN-OST	690.4	0	0	0	0	690.4
						\$5,005	\$0	\$0	\$0	\$0	\$5,005

Project Name: WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION
Project Location: INEEL - TAN
Estimate Number: 6304-A

DETAIL ITEM REPORT

Client: J. J. Jessmore
 Prepared By: B. W. Wallace/R. D. Roseland
 Estimate Type: Project Support

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.03.02 SUBCONTRACTOR	SC1	Contractor GCS DURING SITE MOB & SET-UP (4-DAY WEEK)	U.C. per MONTH	1.70	0	0	0	2000	0	0	2000
Consumables, Small Tools, & PPE					\$0	\$0	\$3,400	\$0	\$0	\$0	\$3,400
Subtotal											
Sales Tax											
INEEL/Subcontractor Overheads											
Subtotal Estimate											
Escalation Contingency											
Total 05.04.02.01.03.02 SUBCONTRACTOR GCS DURING SITE MOB & SET-UP (4-DAY WEEK)				1,304							
05.04.02.01.03.03 SUBCONTRACTOR GCS DURING 24-HOUR OXIDATION PROCESS											
Project Manager	SC1	U.C. per WEEK	40	CN-SUPR	1600	0	0	0	0	0	1600
Planning & Scheduling Personnel	SC1	U.C. per WEEK	7.60	304	\$40.00	\$12,160	\$0	\$0	\$0	\$0	\$12,160
Secretary	SC1	U.C. per WEEK	7.60	304	CN-OST	1380.8	0	0	0	0	1380.8
Travel Expense	SC1	U.C. per MONTH	7.60	304	CN-OST	\$10,494	\$0	\$0	\$0	\$0	\$10,494
Temporary On Site Office, Storage, Change & Shower Facilities	SC1	U.C. per MONTH	1.75	0	0	\$0	\$0	2000	0	0	2000
Allowance For Phones	SC1	U.C. per WEEK	7.60	0	0	\$0	\$4,200	\$0	\$0	\$0	\$3,500
3/4 Ton 4x4 Pick-up Trucks (3 each)	SC1	U.C. per MONTH	1.75	0	0	\$0	\$0	570	\$0	\$0	570
20 Ton Hydraulic Crane	SC1	U.C. per MONTH	1.75	0	0	\$0	\$6,087	3484	0	0	3484
Crane/Forklift Operator (24 hour coverage)	SC1	U.C. per MONTH	1.75	728	CN-OST	25130.56	\$0	\$0	\$0	\$0	\$6,097
8,000 LB. Rough Terrain Forklift	SC1	U.C. per MONTH	1.75	1,274	\$34.52	\$43,978	\$0	\$0	\$0	\$0	10136
Air Compressor (175 CFM Trailer Mounted)	SC1	U.C. per MONTH	1.75	0	0	\$0	\$17,738	\$0	\$0	\$0	\$17,738

Project Name: WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION
Revision To Previous TPC Estimate 6304
Project Location: INEEL - TAN
Estimate Number: 6304-A

DETAIL ITEM REPORT

Client: J. J. Jessmore
 Prepared By: B. W. Wallace/R. D. Roseland
 Estimate Type: Project Support

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>SC1</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
<u>05.04.02.01.03.03</u>	<u>SUBCONTRACTOR GC's DURING 24-HOUR OXIDATION PROCESS</u>	<u>U.C. per MONTH</u>		0	0				5360	0	0	5360
40 KW Generator			SC1	1.75	0		\$0	\$9,380	\$0	\$0	\$0	\$9,380
Memo:	\$469/month for rental & \$4,891/month operating expense (based upon 24 hour/day operation = 730 hours/month).											
40 KW Backup Generator			SC1	1.75	0		\$0	469	0	0	0	469
Memo:	\$469/month for rental, operating expense not included based on the assumption this backup unit will not be needed.							\$821	\$0	\$0	\$0	\$821
Portable Toilets (2 each)			SC1	U.C. per WEEK	7.60	0		0	90	0	0	90
WORKABILITY WALKDOWN PODS etc. - .5 HR/DAY X 10 WORKERS X 4 DAY/WK			SC1	U.C. per WEEK	7.60	20	CN-OST	690.4	0	0	0	690.4
Consumables, Small Tools, & PPE			SC1	U.C. per MONTH	1.75	0		0	2000	0	0	2000
Subtotal								\$82,374	\$55,974	\$8,254	\$0	\$146,602
Sales Tax								\$0	\$0	\$0	\$0	\$285
INEEL/Subcontractor Overheads								\$21,417	\$14,553	\$2,220	\$0	\$38,191
Subtotal Estimate												\$186,077
Escalation												
Contingency												
--- Total 06.04.02.01.03.03 SUBCONTRACTOR GC's DURING 24-HOUR OXIDATION PROCESS								\$167,082	\$113,544	\$17,321	\$0	\$186,077
06.04.02.01.03.04 SUBCONTRACTOR GC's DURING WASTE DISPOSAL & PROCESS DEMOB (4-DAY WEEK)												
Demobilization From TAN After Oxidation Process			SC1	U.C. per LS	1.00	0	CN-OST	0	0	10000	0	10000
Project Manager			SC1	U.C. per WEEK	6.25	40	CN-SUPR	1600	0	0	0	1600
Planning & Scheduling Personnel			SC1	U.C. per WEEK	6.25	40	CN-OST	\$10,000	\$0	\$0	\$0	\$10,000
Secretary			SC1	U.C. per WEEK	6.25	250	\$34.52	1380.8	0	0	0	1380.8
Travel Expense			SC1	U.C. per MONTH	1.45	0	CN-OST	\$8,630	0	0	0	8,630
Temporary On Site Office, Storage, Change & Shower Facilities			SC1	U.C. per MONTH	1.45	0		0	2400	0	0	2400
								\$0	\$0	\$0	\$0	\$3,480

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.03.04 SUBCONTRACTOR GCS DURING WASTE DISPOSAL & PROCESS DEMOB (4-DAY WEEK)	SC1	U.C. per WEEK	6.25	0	\$0	\$0	\$75	\$469	\$0	\$0	75
Allowance For Phones	SC1	U.C. per MONTH									\$469
3/4 Ton 4x4 Pick-up Trucks (3 each)	SC1	U.C. per MONTH	1.45	0	\$0	3484	0	0	0	0	3484
20 Ton Hydraulic Crane	SC1	U.C. per MONTH	1.45	0	\$0	5,052	\$0	\$0	\$0	\$0	\$5,052
Crane/Forklift Operator	SC1	U.C. per MONTH	1.45	239	CN-OST \$34.52	5695.8	0	0	0	0	5695.8
8,000 LB. Rough Terrain Forklift	SC1	U.C. per MONTH	1.45	0	\$0	10136	0	0	0	0	\$8,259
Air Compressor (175 CFM Trailer Mounted)	SC1	U.C. per MONTH	1.45	0	\$0	\$14,697	\$0	\$0	\$0	\$0	\$14,697
40 KW Generator	SC1	U.C. per MONTH	1.45	0	\$0	\$0	0	0	0	0	10136
Memo: \$469/month for rental & \$1,106/month operating expense (based upon 165 hours/month).	SC1	U.C. per MONTH	1.45	0	\$0	1575	0	0	0	0	1575
40 KW Backup Generator	SC1	U.C. per MONTH	1.45	0	\$0	\$2,284	\$0	\$0	\$0	\$0	\$2,284
Memo: \$469/month for rental, operating expense not included based on the assumption this backup unit will not be needed.	SC1	U.C. per WEEK	6.25	0	\$0	469	0	0	0	0	469
Portable Toilets (2 each)	SC1	U.C. per WEEK	6.25	0	\$0	680	\$0	\$0	\$0	\$0	\$680
WORKABILITY WALKDOWN PODs etc. - .5 HR/DAY X 10 WORKERS X 4 DAY/WK	SC1	U.C. per WEEK	6.25	20	CN-OST \$34.52	690.4	0	90	0	0	90
Consumables, Small Tools, & PPE	SC1	U.C. per MONTH	1.45	0	\$0	\$0	\$563	\$0	\$0	\$0	\$563
50 in Lowboy w/ Tractor	SC1	U.C. per WEEK									
Memo: \$469/month for rental, operating expense not included based on the assumption this backup unit will not be needed.	SC1	U.C. per MONTH	1.45	0	\$0	0	2000	0	0	0	2000
Subtotal											
Sales Tax											
INEEEL/Subcontractor Overheads		26.00%									
Subtotal Estimate											
Contingency											
-- Total	05.04.02.01.03.04 SUBCONTRACTOR GCS DURING WASTE DISPOSAL & PROCESS DEMOB (4-DAY WEEK)	1,114			\$80,797	\$87,024	\$14,335	\$20,284	\$0	\$0	\$202,439

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Revision To Previous TPC Estimate 6304
 Project Location: INEEL - TAN
 Estimate Number: 6304-A

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>U.C. per LS</u>	<u>Cty</u>	<u>Hrs.</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
<u>05.04.02.01.03.05 SUBCONTRACTOR GCS DURING TANK REMOVAL/SITE RESTORATION</u>	<u>SC1</u>	<u>U.C. per WEEK</u>	<u>1.00</u>	<u>0</u>	<u>0</u>	<u>CN-OST</u>	<u>\$0</u>	<u>0</u>	<u>\$0</u>	<u>\$10,000</u>	<u>0</u>	<u>10000</u>
Mobilization To TAN For Tank Removal/Site Restoration	SC1	U.C. per WEEK	16.25	40	CN-SUPR \$40.00	1600 \$26,000	0	0	0	\$0	0	1600 \$26,000
Project Manager	SC1	U.C. per WEEK	16.25	650	CN-OST \$34.52	1380.8 \$22,438	0	0	0	\$0	0	1380.8 \$22,438
Planning & Scheduling Personnel	SC1	U.C. per WEEK	16.25	40	CN-OST \$34.52	1380.8 \$22,438	0	0	0	\$0	0	1380.8 \$22,438
Secretary	SC1	U.C. per MONTH	16.25	650	U.C. per MONTH \$34.52	0	0	0	0	\$0	0	1380.8 \$22,438
Travel Expense	SC1	U.C. per MONTH	3.75	0	0	\$0	0	2000 \$7,500	0	0	0	2000 \$7,500
Temporary On Site Office, Storage, Change & Shower Facilities	SC1	U.C. per MONTH	3.75	0	0	\$0	2400 \$9,000	0	0	0	0	2400 \$9,000
Allowance For Phones	SC1	U.C. per WEEK	16.25	0	0	\$0	0	75 \$1,219	0	0	0	75 \$1,219
3/4 Ton 4x4 Pick-up Trucks (3 each)	SC1	U.C. per MONTH	3.75	0	0	\$0	3484 \$13,065	0	0	0	0	3484 \$13,065
20 Ton Hydraulic Crane	SC1	U.C. per MONTH	3.75	0	0	\$0	10136 \$36,010	0	0	0	0	10136 \$38,010
Crane/Forklift Operator	SC1	U.C. per MONTH	165	619	CN-OST \$34.52	5695.8 \$21,359	0	0	0	\$0	0	5695.8 \$21,359
8,000 LB. Rough Terrain Forklift	SC1	U.C. per MONTH	3.75	0	0	\$0	10136 \$36,010	0	0	0	0	10136 \$36,010
Air Compressor (175 CFM Trailer Mounted)	SC1	U.C. per MONTH	3.75	0	0	\$0	0	0	0	0	0.101	0.101
40 KW Generator	SC1	U.C. per MONTH	3.75	0	0	\$0	1575 \$5,906	0	0	0	0	1575 \$5,906
Memo: \$469/month for rental & \$1,106/month operating expense (based upon 165 hours/month).	SC1	U.C. per MONTH	3.75	0	0	\$0	469 \$1,759	0	0	0	0	469 \$1,759
40 KW Backup Generator	SC1	U.C. per WEEK	3.75	0	0	\$0	90 \$1,463	0	0	0	0	90 \$1,463
Portable Toilets (2 each)	SC1	U.C. per WEEK	16.25	0	0	\$0	0	0	0	0	0	0

Memo: \$469/month for rental, operating expense not included based on the assumption this backup unit will not be needed.

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEI - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>GCS DURING TANK REMOVAL/SITE RESTORATION (4-DAY WEEK)</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.03.05	SUBCONTRACTOR GCS DURING TANK REMOVAL/SITE RESTORATION (4-DAY WEEK)	SC1	U.C. per WEEK	20	CN-OST \$34.52	\$11,219	690.4 \$0	0 \$0	0 \$0	0 \$0	690.4 \$11,219
WORKABILITY WALKDOWN PODS etc. - .5 HR/DAY X 10 WORKERS X 4 DAY/WK				16.25							
Consumables, Small Tools, & PPE	SC1	U.C. per MONTH	3.75	0		0 \$0	0 \$0	2000 \$7,500	0 \$0	0 \$0	2000 \$7,500
Final Demobilization From TAN	SC1	U.C. per LS	1.00	0	CN-OST	0 \$0	0 \$0	0 \$0	10000 \$10,000	0 \$0	10000 \$10,000
Subtotal						\$103,454 \$0	\$105,750 \$611	\$17,681 \$0	\$20,000 \$0	\$0 \$0	\$246,886 \$611
Sales Tax	INEEI/Subcontractor Overheads		26.00%			\$26,898 \$27,495		\$4,756 \$5,200			\$64,349
Subtotal Estimate											
Escalation											
Contingency											
--- Total 05.04.02.01.03.05 SUBCONTRACTOR GCS DURING TANK REMOVAL/SITE RESTORATION (4-DAY WEEK)				2,894		\$209,841 \$214,98		\$37,103 \$2,651	\$40,568 \$2,898	\$0 \$0	\$502,009 \$311,846
05.04.02.01.05.01 I.F. RENTAL FACILITY FOR MOCKUP											
Facility Rental During Mockup Operations	SC1	U.C. per MONTH	2.00	0		0 \$0	0 \$0	0 \$0	15000 \$30,000	0 \$0	15000 \$30,000
Utilities, Janitorial, Repairs, etc. During Mockup Operations	SC1	U.C. per MONTH	2.00	0		0 \$0	0 \$0	0 \$0	2000 \$4,000	0 \$0	2000 \$4,000
Facility Rental During Period Between Mockup Phase & Site Phase	SC1	U.C. per MONTH	4.50	0		0 \$0	0 \$0	0 \$0	15000 \$67,500	0 \$0	15000 \$67,500
Subtotal						\$0 \$0	\$0 \$0	\$0 \$0	\$101,500 \$26,390	\$0 \$0	\$101,500 \$26,390
Sales Tax	INEEI/Subcontractor Overheads		26.00%								
Subtotal Estimate											
Escalation											
Contingency											
--- Total 05.04.02.01.05.01 I.F. RENTAL FACILITY FOR MOCKUP				0		\$0 \$0	\$0 \$0	\$0 \$0	\$221,496 \$78,898	\$0 \$0	\$221,496 \$121,890
05.04.02.01.05.01.02 SET UP SURGE & EXTRACTION TANK (AEA SYSTEM)											
Construction Worker On Site (4 Workers)	SC1	U.C. per DAY	3.00	32	CN-OST \$34.52	1104.64 \$3,314	0 \$0	0 \$0	0 \$0	0 \$0	1104.64 \$33,314
Supervisor/General Foreman	SC1	U.C. per DAY	3.00	8	CN-SUPR \$40.00	320 \$960	0 \$0	0 \$0	0 \$0	0 \$0	320 \$960

Project Name: WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION
Revision To Previous TPC Estimate 6304
Project Location: INEEL - TAN
Estimate Number: 6304-A

DETAIL ITEM REPORT

Client: J. J. Jessmore
 Prepared By: B. W. Wallace/R. D. Roseland
 Estimate Type: Project Support

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs.</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.02 SET UP SURGE & EXTRACTION TANK (AEA SYSTEM)											
SC1	U.C. per DAY		8	24	CN-OST \$34.52	276.16 \$828	0	0	\$0	0	276.16 \$828
Subcontractor Engineering			3.00								
SC1	U.C. per DAY		8	24	CN-OST \$34.52	276.16 \$828	0	0	\$0	0	276.16 \$828
Subcontractor Quality			3.00								
SC1	U.C. per DAY		8	24	CN-OST \$34.52	276.16 \$828	0	0	\$0	0	276.16 \$828
Subcontractor Safety			3.00								
SC1	U.C. per DAY		8	24	CN-OST \$34.52	276.16 \$828	0	0	\$0	0	276.16 \$828
Radiological Technician			3.00								
Subtotal						\$7,588	\$0	\$0	\$0	\$0	\$7,588
Sales Tax						\$0	\$0	\$0	\$0	\$0	\$0
INEEL/Subcontractor Overheads			26.00%			\$1,973	\$0	\$0	\$0	\$0	\$1,973
Subtotal Estimate											
Contingency											
-- Total 05.04.02.01.05.01.02 SET UP SURGE & EXTRACTION TANK (AEA SYSTEM)						\$16,558	\$0	\$0	\$0	\$0	\$16,558
05.04.02.01.05.01.03 SET UP CONTROL TRAILER & GENERATOR											
SC1	U.C. per DAY		40	240	CN-OST \$34.52	1380.8 \$8,285	0	0	\$0	0	1380.8 \$8,285
Construction Worker On Site (4 Workers)			6.00								
SC1	U.C. per DAY		10	60	CN-SUPR \$40.00	400 \$2,400	0	0	\$0	0	400 \$2,400
Supervisor/General Foreman			6.00								
SC1	U.C. per DAY		10	60	CN-OST \$34.52	345.2 \$2,071	0	0	\$0	0	345.2 \$2,071
Subcontractor Engineering			6.00								
SC1	U.C. per DAY		10	60	CN-OST \$34.52	345.2 \$2,071	0	0	\$0	0	345.2 \$2,071
Subcontractor Quality			6.00								
SC1	U.C. per DAY		10	60	CN-OST \$34.52	345.2 \$2,071	0	0	\$0	0	345.2 \$2,071
Subcontractor Safety			6.00								

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Hrs.</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.03 SET UP CONTROL TRAILER & GENERATOR		SC1 U.C. per DAY	10	CN-OST \$34.52	345.2 \$2,071	0	0	0	0	\$4,071
Radiological Technician			6.00							
Subtotal										
Sales Tax										
INEEL/Subcontractor Overheads	26.00%									
Subtotal Estimate										
Escalation										
Contingency										
-- Total 05.04.02.01.05.01.03 SET UP CONTROL TRAILER & GENERATOR			540		\$41,396		\$0		\$0	\$41,396
05.04.02.01.04 SET UP CHEMICAL FEED & GROUTING SYSTEMS										
Construction Worker On Site (4 Workers)	SC1 U.C. per DAY		32	CN-OST \$34.52	1104.64 \$8,837	0	0	0	0	1104.64 \$8,837
Supervisor/General Foreman	SC1 U.C. per DAY		8	CN-SUPR \$40.00	320 \$2,560	0	0	0	0	320 \$2,560
Subcontractor Engineering	SC1 U.C. per DAY		8.00	CN-OST \$34.52	276.16 \$2,209	0	0	0	0	276.16 \$2,209
Subcontractor Quality	SC1 U.C. per DAY		8.00	CN-OST \$34.52	276.16 \$2,209	0	0	0	0	276.16 \$2,209
Subcontractor Safety	SC1 U.C. per DAY		8.00	CN-OST \$34.52	276.16 \$2,209	0	0	0	0	276.16 \$2,209
Radiological Technician	SC1 U.C. per DAY		8.00	CN-OST \$34.52	276.16 \$2,209	0	0	0	0	276.16 \$2,209
Subtotal										
Sales Tax										
INEEL/Subcontractor Overheads	26.00%									
Subtotal Estimate										
Escalation										
Contingency										
-- Total 05.04.02.01.05.01.04 SET UP CHEMICAL FEED & GROUTING SYSTEMS			576		\$44,156		\$0		\$0	\$44,156
05.04.02.01.05.01.05 SET UP REACTION VESSELS & CHILLERS										
Construction Worker On Site (4 Workers)	SC1 U.C. per DAY		5.00	CN-OST \$34.52	1104.64 \$5,523	0	0	0	0	1104.64 \$5,523

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEL - TAN**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

Estimate Number: **6304-A**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs.</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
06.04.02.01.06.01.06 SET UP REACTION VESSELS & CHILLERS		SC1 U.C. per DAY	5.00	8 40	CN-SUPR \$40.00	320 \$1,600	0 \$0	0 \$0	0 \$0	0 \$0	320 \$1,600
Supervisor/General Foreman		SC1 U.C. per DAY	5.00	8 40	CN-OST \$34.52	276.16 \$1,381	0 \$0	0 \$0	0 \$0	0 \$0	276.16 \$1,381
Subcontractor Engineering		SC1 U.C. per DAY	5.00	8 40	CN-OST \$34.52	276.16 \$1,381	0 \$0	0 \$0	0 \$0	0 \$0	276.16 \$1,381
Subcontractor Quality		SC1 U.C. per DAY	5.00	8 40	CN-OST \$34.52	276.16 \$1,381	0 \$0	0 \$0	0 \$0	0 \$0	276.16 \$1,381
Subcontractor Safety		SC1 U.C. per DAY	5.00	8 40	CN-OST \$34.52	276.16 \$1,381	0 \$0	0 \$0	0 \$0	0 \$0	276.16 \$1,381
Radiological Technician		SC1 U.C. per DAY	5.00	8 40	CN-OST \$34.52	276.16 \$1,381	0 \$0	0 \$0	0 \$0	0 \$0	276.16 \$1,381
Subtotal Sales Tax INEEL/Subcontractor Overheads						\$12,646 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$12,646 \$0
Subtotal Estimate Escalation Contingency						\$1,832 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$1,832 \$0
--Total 06.04.02.01.06.01.06 SET UP REACTION VESSELS & CHILLERS			360			\$27,597	\$0	\$0	\$0	\$0	\$27,597
06.04.02.01.06.01.06 SET UP OFF GAS SYSTEM		SC1 U.C. per DAY	6.00	32 192	CN-OST \$34.52	1104.64 \$6,628	0 \$0	0 \$0	0 \$0	0 \$0	1104.64 \$6,628
Construction Worker On Site (4 Workers)		SC1 U.C. per DAY	6.00	8 48	CN-SUPR \$40.00	320 \$1,920	0 \$0	0 \$0	0 \$0	0 \$0	320 \$1,920
Supervisor/General Foreman		SC1 U.C. per DAY	6.00	8 48	CN-OST \$34.52	276.16 \$1,657	0 \$0	0 \$0	0 \$0	0 \$0	276.16 \$1,657
Subcontractor Engineering		SC1 U.C. per DAY	6.00	8 48	CN-OST \$34.52	276.16 \$1,657	0 \$0	0 \$0	0 \$0	0 \$0	276.16 \$1,657
Subcontractor Quality		SC1 U.C. per DAY	6.00	8 48	CN-OST \$34.52	276.16 \$1,657	0 \$0	0 \$0	0 \$0	0 \$0	276.16 \$1,657
Subcontractor Safety		SC1 U.C. per DAY	6.00	8 48	CN-OST \$34.52	276.16 \$1,657	0 \$0	0 \$0	0 \$0	0 \$0	276.16 \$1,657

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
<u>05.04.02.01.05.01.06</u>	<u>SET UP OFF GAS SYSTEM</u>	SC1	U.C. per DAY	6.00	8	CN-OST \$34.52	276.16 \$1,657	0 \$0	0 \$0	0 \$0	276.16 \$1,657
Subtotal											
Sales Tax											
INEEL/Subcontractor Overheads											
Subtotal Estimate											
Escalation											
Contingency											
-- Total 05.04.02.01.05.01.06 SET UP OFF GAS SYSTEM				432		\$33,117	\$0	\$0	\$0	\$0	\$33,117
<u>05.04.02.01.05.01.07</u>	<u>PERFORM DRY RUN TEST</u>	SC1	U.C. per DAY	5.00	32	CN-OST \$34.52	1104.64 \$5,523	0 \$0	0 \$0	0 \$0	1104.64 \$5,523
Construction Worker On Site (4 Workers)											
Supervisor/General Foreman											
Subcontractor Engineering											
Subcontractor Quality											
Subcontractor Safety											
Radiological Technician											
Subtotal											
Sales Tax											
INEEL/Subcontractor Overheads											
Subtotal Estimate											
Escalation											
Contingency											
-- Total 05.04.02.01.05.01.07 PERFORM DRY RUN TEST				360		\$27,597	\$0	\$0	\$0	\$0	\$27,597
<u>05.04.02.01.05.02.01</u>	<u>SITE PREPARATION</u>	SC1	U.C. per DAY	4.00	60	CN-OST \$34.52	1,832 \$8,285	0 \$0	0 \$0	0 \$0	1,832 \$8,285
Construction Worker On Site (6 Workers)											
Supervisor/General Foreman											
Subtotal Estimate											
Escalation											
Contingency											
-- Total 05.04.02.01.05.02.01 SITE PREPARATION											

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Revision To Previous TPC Estimate 6304
 Project Location: INEEL - TAN
 Estimate Number: 6304-A

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
<u>06.04.02.01 SITE PREPARATION</u>											
SC1	Purchase Sand, Gravel, 20-Mil PVC Liner, 16 OZ Geotextile Fabric	U.C. per SF	4,500.00	0	CN-OST	0	0	\$9,000	2	0	\$9,000
Cat 950 4 CY Front End Loader	SC1	U.C. per DAY	4.00	0		\$0	405	\$0	0	0	405
Caterpillar 140 Road Grader	SC1	U.C. per DAY	4.00	0		\$0	530	\$0	0	0	530
4,000 Gallon Water Truck	SC1	U.C. per DAY	4.00	0		\$0	314	\$0	0	0	314
Purchase Temporary Fencing, Barricades, & Signage	SC1	U.C. per LF	325.00	0		\$0	0	\$1,300	4	0	4
Memo: Assume electrical power will be available from an existing source at TAN. Also assume electrical power requirement will not exceed 3 PH 480 Volt feeds.	SC1	U.C. per LS	1.00	0		\$0	0	\$4,000	0	0	4,000
Purchase Eyewash Station, Fire Extinguishers, Spill Kit, First Aid Kits	SC1	U.C. per LS	1.00	0		\$0	0	2000	0	0	2000
Subcontractor Engineering	SC1	U.C. per DAY	4.00	40	CN-OST	345.2	0	\$0	0	0	345.2
Subcontractor Quality	SC1	U.C. per DAY	4.00	40	CN-OST	345.2	0	\$0	0	0	345.2
Subcontractor Safety	SC1	U.C. per DAY	4.00	40	CN-OST	345.2	0	\$0	0	0	345.2
Radiological Technician	SC1	U.C. per DAY	4.00	40	CN-OST	345.2	0	\$0	0	0	345.2
Subtotal Sales Tax INEEL/Subcontractor Overheads				26.00%		\$15,408	\$4,986	\$12,300	\$4,000	\$0	\$36,704
Subtotal Escalation Contingency						\$0	\$0	\$738	\$0	\$0	\$738
-Total 06.04.02.01 SITE PREPARATION			440		\$29,834	\$3,573	\$26,245	\$7,746	\$0	\$72,497	
<u>06.04.02.01.02 SET UP SURGE & EXTRACTION TANK (AEA SYSTEM)</u>											
SC1	Construction Worker On Site (4 Workers)	U.C. per DAY	3.00	40	CN-OST	1380.8	0	\$0	0	0	1380.8
				120	\$34.52	\$4,142	\$0	\$0	\$0	\$0	\$4,142
INEEL											
06/06/2003	11:30:21										

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INNEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
06.04.02.01.05.02 SET UP SURGE & EXTRACTION TANK (AEA SYSTEM)											
	SC1	U.C. per DAY	3.00	10	CN-SUPR	400	0	0	0	0	\$400
	Supervisor/General Foreman					\$1,200					\$1,200
	SC1	U.C. per DAY	3.00	10	CN-OST	345.2	0	0	0	0	345.2
	Subcontractor Engineering					\$1,036					\$1,036
	SC1	U.C. per DAY	3.00	10	CN-OST	345.2	0	0	0	0	345.2
	Subcontractor Quality					\$1,036					\$1,036
	SC1	U.C. per DAY	3.00	10	CN-OST	345.2	0	0	0	0	345.2
	Subcontractor Safety					\$1,036					\$1,036
	Radiological Technician	U.C. per DAY	3.00	10	CN-OST	345.2	0	0	0	0	345.2
						\$1,036					\$1,036
Subtotal											
Sales Tax											\$9,485
INNEEL/Subcontractor Overheads											\$0
											\$2,466
Subtotal Estimate											\$11,951
Escalation											\$1,374
Contingency											\$5,040
.... Total 06.04.02.01.05.02 SET UP SURGE & EXTRACTION TANK (AEA SYSTEM)				270		\$18,365		\$0		\$0	\$18,365
06.04.02.01.05.02.03 SETUP CONTROL TRAILER & GENERATOR											
	SC1	U.C. per DAY	8.00	40	CN-OST	1380.8	0	0	0	0	1380.8
	Construction Worker On Site (4 Workers)					\$11,046					\$11,046
	SC1	U.C. per DAY	8.00	10	CN-SUPR	400	0	0	0	0	400
	Supervisor/General Foreman					\$3,200					\$3,200
	SC1	U.C. per DAY	8.00	10	CN-OST	345.2	0	0	0	0	345.2
	Subcontractor Engineering					\$2,762					\$2,762
	SC1	U.C. per DAY	8.00	10	CN-OST	345.2	0	0	0	0	345.2
	Subcontractor Quality					\$2,762					\$2,762
	SC1	U.C. per DAY	8.00	10	CN-OST	345.2	0	0	0	0	345.2
	Subcontractor Safety					\$2,762					\$2,762

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
Project Location: **INEEL - TAN**
Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.05.02.03	SET UP CONTROL TRAILER & GENERATOR	U.C. per DAY	8.00	10	CN-OST \$34.52	345.2 \$2,762	0	0	0	0	345.2 \$2,762
Radiological Technician											
Subtotal						\$25,293 \$0	\$0	\$0	\$0	\$0	\$25,293 \$0
Sales Tax						\$6,576 \$0	\$0	\$0	\$0	\$0	\$6,576 \$0
INEEL/Subcontractor Overheads											
Subtotal Estimate											
Escalation											
Contingency											
— Total 05.04.02.01.05.02.03 SET UP CONTROL TRAILER & GENERATOR			720			\$48,973	\$0	\$0	\$0	\$0	\$48,973
05.04.02.01.05.02.04	SET UP CHEMICAL FEED & GROUTING SYSTEMS	U.C. per DAY									
Construction Worker On Site (6 Workers)	SC1	U.C. per DAY	5.00	300	CN-OST \$34.52	2071.2 \$10,356	0	0	0	0	2071.2 \$10,356
Supervisor/General Foreman	SC1	U.C. per DAY	5.00	10	CN-SUPR \$40.00	400 \$2,000	0	0	0	0	400 \$2,000
Subcontractor Engineering	SC1	U.C. per DAY	5.00	50	CN-OST \$34.52	345.2 \$1,726	0	0	0	0	345.2 \$1,726
Subcontractor Quality	SC1	U.C. per DAY	5.00	10	CN-OST \$34.52	345.2 \$1,726	0	0	0	0	345.2 \$1,726
Subcontractor Safety	SC1	U.C. per DAY	5.00	50	CN-OST \$34.52	345.2 \$1,726	0	0	0	0	345.2 \$1,726
Radiological Technician	SC1	U.C. per DRUM	5.00	50	CN-OST \$34.52	345.2 \$1,726	0	0	0	0	345.2 \$1,726
Purchase Sodium Persulfate	SC1	U.C. per LOAD	550.00	0		0	0	220.5 \$0	0	0	220.5 \$0
Memo: 550 each 55-gallon drums at 225 lbs./drum = 123,750 lbs. (56,152 kg) are required. Bulk price is \$0.98/lb. = \$220.50 excluding tax & freight per a phone call from Rick Fahrsworth to FMC Chemical Products Group-Active Oxidants Division in Pennsylvania (215-299-6690) on 5/8/03.											
Freight For Sodium Persulfate	SC1	U.C. per LOAD	2.00	0		0	0	5750 \$11,500	0	0	5750 \$11,500
Memo: Assume approx. 2,300 miles from Pennsylvania at \$2.50/loaded mile for a truck towing two trailers.											
Purchase Dry Grout For Oxidized Sludge	SC1	U.C. per LB	166,000.00	0		0	0	119,520 \$0	0	0	119,520 \$0
Memo: \$0.72/lb. excluding tax & freight for a blast furnace slag/portland cement grout.											
Freight For Dry Grout	SC1	U.C. per LOAD	4.00	0		0	0	750 \$3,000	0	0	750 \$3,000
Memo: Assume approx. 300 miles at \$2.50/loaded mile for a single trailer load.											

Project Name: WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION
Revision To Previous TPC Estimate: 6304
Project Location: INEEL - TAN
Estimate Number: 6304-A

DETAIL ITEM REPORT

REVISION TO PREVIOUS TPC ESTIMATE 6304

Client: J. J. Jessmore
 Prepared By: B. W. Wallace/R. D. Roseland
 Estimate Type: Project Support

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>U.C. per liters</u>	<u>Qty</u>	<u>Hrs.</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
<u>05.04.02.01.05.02.04 SET UP CHEMICAL FEED & GROUTING SYSTEMS</u>		SC1	U.C. per liters									
Purchase Sodium Hydroxide				84.00	0		0		0	0	0	0.64
		SC1	U.C. per KG				\$0	\$0	\$54	\$0	\$0	\$54
Purchase Iron Sulfate				75.00	0		0		13.65	0	0	13.65
Memo: Price is per a 5/8/03 fax'd quotation from Alfa Aesar.							\$0	\$0	\$1,024	\$0	\$0	\$1,024
Purchase Copper Sulfate		SC1	U.C. per KG	55.00	0		0		36.01	0	0	36.01
Memo: Price is per a 5/8/03 fax'd quotation from Alfa Aesar.							\$0	\$1,981	\$0	\$0	\$0	\$1,981
Hydrogen Peroxide		SC1	U.C. per liters	600.00	0		0		4.07	0	0	4.07
Nitric Acid		SC1	U.C. per liters	10.00	0		0		2,442	\$0	\$0	2,442
Sodium Hydroxide		SC1	U.C. per kg	55.00	0		0		44.2	0	0	44.2
Anti Foaming Agent		SC1	U.C. per allow	1.00	0		0		442	\$0	\$0	442
Subtotal												
Sales Tax												
INEEL/Subcontractor Overheads					26.00%							
Subtotal Estimate												
Escalation Contingency												
--- Total 05.04.02.01.05.02.04 SET UP CHEMICAL FEED & GROUTING SYSTEMS				550			\$37,282	\$0	\$537,582	\$0	\$0	\$574,874
<u>05.04.02.01.05.02.05 SET UP REACTION VESSELS & CHILLERS</u>		SC1	U.C. per DAY									
Construction Worker On Site (4 Workers)				3.00	40	CN-OST	1380.8	0	0	0	0	1380.8
							\$4,142	\$0	\$0	\$0	\$0	\$4,142
Supervisor/General Foreman		SC1	U.C. per DAY	3.00	10	CN-SUPR	400	0	0	0	0	400
Subcontractor Engineering		SC1	U.C. per DAY	3.00	10	CN-OST	345.2	0	0	0	0	345.2
							\$1,036	\$0	\$0	\$0	\$0	\$1,036
Subcontractor Quality		SC1	U.C. per DAY	3.00	10	CN-OST	345.2	0	0	0	0	345.2
Subcontractor Safety		SC1	U.C. per DAY	3.00	10	CN-OST	345.2	0	0	0	0	345.2
							\$1,036	\$0	\$0	\$0	\$0	\$1,036

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Cty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.05.02.06 SET UP REACTION VESSELS & CHILLERS		SC1 U.C. per DAY		10 30	CN-OST \$34.52	345.2 \$1,036	0	0	0	0	345.2 \$1,036
Radiological Technician											
Subtotal						\$9,485	\$0	\$0	\$0	\$0	\$9,485
Sales Tax						\$0	\$0	\$0	\$0	\$0	\$0
INEEL/Subcontractor Overheads						\$2,466	\$0	\$0	\$0	\$0	\$2,466
Subtotal Estimate											\$11,951
Escalation											
Contingency											
— Total 05.04.02.01.05.02.06 SET UP REACTION VESSELS & CHILLERS			270			\$18,366	\$0	\$0	\$0	\$0	\$18,366
05.04.02.01.05.02.06 SET UP OFF GAS SYSTEM											
Construction Worker On Site (4 Workers)		U.C. per DAY		40	CN-OST \$34.52	1380.8 \$4,142	0	0	0	0	1380.8 \$4,142
Supervisor/General Foreman		U.C. per DAY		10 30	CN-SUPR \$40.00	400 \$1,200	0	0	0	0	400 \$1,200
Subcontractor Engineering		U.C. per DAY		10 30	CN-OST \$34.52	345.2 \$1,036	0	0	0	0	345.2 \$1,036
Subcontractor Quality		U.C. per DAY		10 30	CN-OST \$34.52	345.2 \$1,036	0	0	0	0	345.2 \$1,036
Subcontractor Safety		U.C. per DAY		10 30	CN-OST \$34.52	345.2 \$1,036	0	0	0	0	345.2 \$1,036
Radiological Technician		U.C. per DAY		10 30	CN-OST \$34.52	345.2 \$1,036	0	0	0	0	345.2 \$1,036
Subtotal						\$9,485	\$0	\$0	\$0	\$0	\$9,485
Sales Tax						\$0	\$0	\$0	\$0	\$0	\$0
INEEL/Subcontractor Overheads						\$2,466	\$0	\$0	\$0	\$0	\$2,466
Subtotal Estimate											\$11,951
Escalation											
Contingency											
— Total 05.04.02.01.05.02.06 SET UP OFF GAS SYSTEM			270			\$18,366	\$0	\$0	\$0	\$0	\$18,366
05.04.02.01.05.02.07 INSTALL WEATHER PROTECTION TENTS											
Construction Worker On Site (4 Workers)		U.C. per DAY		40	CN-OST \$34.52	1380.8 \$4,142	0	0	0	0	1380.8 \$4,142
Supervisor/General Foreman		U.C. per DAY		10 30	CN-SUPR \$40.00	400 \$1,200	0	0	0	0	400 \$1,200

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Lessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.06.02.07	INSTALL WEATHER PROTECTION TENTS	SC1	U.C. per SF	344.00	0		0	\$0	\$4,128	0	\$0
Purchase 3 Tents	Memo: Assume 8' x 8', 20' x 8', & 15' x 8' tents = 344 SF.										\$4,128
Subcontractor Engineering	SC1	U.C. per DAY	3.00	10	CN-OST	345.2	0	0	0	0	345.2
Subcontractor Quality	SC1	U.C. per DAY	3.00	10	CN-OST	345.2	0	0	0	0	345.2
Subcontractor Safety	SC1	U.C. per DAY	3.00	10	CN-OST	345.2	0	0	0	0	345.2
Radiological Technician	SC1	U.C. per DAY	3.00	10	CN-OST	345.2	0	0	0	0	345.2
Subtotal											
Sales Tax						\$9,485	\$0	\$4,128	\$0	\$0	\$13,613
INEEL/Subcontractor Overheads						\$0	\$0	\$248	\$0	\$0	\$248
Subtotal Estimate						\$2,466	\$0	\$1,138	\$0	\$0	\$3,604
Escalation											
Contingency											
-- Total 05.04.02.01.06.02.07 INSTALL WEATHER PROTECTION TENTS				270		\$18,365	\$0	\$8,472	\$0	\$0	\$26,837
05.04.02.01.06.02.08	PERFORM INTEGRITY TEST	SC1									
Construction Worker On Site (4 Workers)		U.C. per DAY	8.00	40	CN-OST	1380.8	0	0	0	0	1380.8
Supervisor/General Foreman	SC1	U.C. per DAY	8.00	10	CN-SUPR	\$11,046	\$0	\$0	\$0	\$0	\$11,046
Subcontractor Engineering	SC1	U.C. per DAY	8.00	10	CN-OST	400	0	0	0	0	400
Subcontractor Quality	SC1	U.C. per DAY	8.00	10	CN-OST	\$34.52	\$0	\$0	\$0	\$0	\$3,200
Subcontractor Safety	SC1	U.C. per DAY	8.00	10	CN-OST	345.2	0	0	0	0	345.2
						\$34.52	\$0	\$0	\$0	\$0	\$2,762
						\$345.2	\$0	\$0	\$0	\$0	\$2,762
						\$345.2	\$0	\$0	\$0	\$0	\$2,762
						\$345.2	\$0	\$0	\$0	\$0	\$2,762

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEL - TAN**
 Estimate Number: **6304-A**

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

DETAIL ITEM REPORT

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Cty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.05.02.08 PERFORM INTEGRITY TEST		U.C. per DAY	8.00	10	80	CN-OST \$34.52	345.2 \$2,762	0	0	0	345.2 \$2,762
Radiological Technician	SC1										
Subtotal						\$25,293 \$0	\$0	\$0	\$0	\$0	\$25,293 \$0
Sales Tax						\$6,576 \$0	\$0	\$0	\$0	\$0	\$6,576 \$0
INEEL/Subcontractor Overheads	26.00%										
Subtotal Estimate						\$3,665 \$13,439	\$0	\$0	\$0	\$0	\$31,869 \$13,439
Escalation											
Contingency											
-- Total 05.04.02.01.05.02.08 PERFORM INTEGRITY TEST			720			\$48,973	\$0	\$0	\$0	\$0	\$48,973
05.04.02.01.05.03 CHEMICAL OXIDATION & GROUTING PROCESS		U.C. per DAY	53.00	96	5,088	CN-OST \$34.52	3313.92 \$175,638	0	0	0	3313.92 \$175,638
Construction Worker On Site (4 Workers)	SC1										
Supervisor/General Foreman	SC1			24		CN-SUPR \$40.00	960 \$50,880	0	0	0	960 \$50,880
Subcontractor Engineering Support	SC1			24		CN-OST \$34.52	828.48 \$43,909	0	0	0	828.48 \$43,909
Subcontractor Quality Inspection & Documentation	SC1			24		CN-OST \$34.52	828.48 \$43,909	0	0	0	828.48 \$43,909
Subcontractor Safety Oversight	SC1			24		CN-OST \$34.52	828.48 \$43,909	0	0	0	828.48 \$43,909
Radiological Technician Support	SC1			53.00	1,272	CN-OST \$34.52	138.08 \$690	0	0	0	138.08 \$690
Construction Worker On Site (Maintenance, 1 Worker)	SC1			5.00	20	CN-OST \$34.52	0	0	0	0	0
Allowance For Filter Changes (3 changes each housing)	SC1			18.00	0	CN-OST \$0	0	750 \$13,500	0	0	750 \$13,500
Subtotal											
Sales Tax						\$402,846 \$0	\$0	\$13,500 \$810	\$0	\$0	\$416,346 \$810
INEEL/Subcontractor Overheads	26.00%					\$104,740 \$0	\$0	\$3,721 \$0	\$0	\$0	\$108,461 \$338,514
Subtotal Estimate											
Escalation											
Contingency											
-- Total 05.04.02.01.05.03 CHEMICAL OXIDATION & GROUTING PROCESS			11,468			\$841,146	\$0	\$33,432	\$0	\$0	\$94,576

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEI - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
<u>05.04.02.01.05.04.01 INSTALL TANK SUMP ACCESS</u>	<u>VEXT</u>	U.C. per allow	1.00	0	CN-OST	0 \$0	0 \$0	0 \$0	8000 \$8,000	0 \$0	8000 \$8,000
VACUUM EXCAVATE access holes to tanks	VEXT	U.C. per allow	80	80	CN-OST	2761.6 \$2,762	0 \$0	0 \$0	0 \$0	0 \$0	2761.6 \$2,762
Training allowance for vacuum operators		U.C. per ea	1.00	12	CN-OST	414.24 \$1,243	0 \$0	500 \$1,500	0 \$0	0 \$0	914.24 \$2,743
12" X 15" pipe w/ machined SW blind flange and radiused end	SC1	U.C. per cuyds	3.00	36	CN-OST	\$34.52 \$1,243					
Concrete poured around 12" pipes	SC1	U.C. per cuyds	10.00	4	CN-OST	13,808 \$34.52	0 \$138	70 \$0	0 \$700	0 \$0	83,808 \$838
Mastic poured in 12" pipes	SC1	U.C. per lot	1.00	2	CN-OST	69.04 \$69	0 \$0	50 \$50	0 \$0	0 \$0	119.04 \$119
DRILL	DRILL	U.C. per allow			CN-OST	0 \$0	0 \$0	0 \$0	14000 \$14,000	0 \$0	14000 \$14,000
Drill through 12" sleeve, penetrate tank and install 8" access spool	DRILL	U.C. per allow	1.00	0	CN-OST	0 \$0	0 \$0	0 \$0	14000 \$14,000	0 \$0	14000 \$14,000
Training allowance for vacuum operators	DRILL	U.C. per allow	1.00	120	CN-OST	4142.4 \$34.52	0 \$4,142	0 \$0	0 \$0	0 \$0	4142.4 \$4,142
Subtotal											
Sales Tax											
INEEI/Subcontractor Overheads											
Subtotal Estimate											
Escalation											
Contingency											
--Total 05.04.02.01.05.04.01 INSTALL TANK SUMP ACCESS			242		\$21,566		\$0	\$5,572	\$57,897	\$0	\$85,025
05.04.02.01.05.04.02 PUMP RINSATE WATER FROM V-TANKS & ADD SOLIDIFICATION AGENT											
Construction Worker On Site (2 Workers)	SC1	U.C. per DAY	2.00	40	CN-OST	1380.8 \$34.52	0 \$0	0 \$0	0 \$0	0 \$0	1380.8 \$2,762
Supervisor/General Foreman	SC1	U.C. per DAY	2.00	10	CN-SUPR	400 \$40.00	0 \$0	0 \$0	0 \$0	0 \$0	400 \$400
Subcontractor Engineering	SC1	U.C. per DAY	2.00	20	CN-OST	345.2 \$34.52	0 \$0	0 \$0	0 \$0	0 \$0	345.2 \$690
Subcontractor Quality	SC1	U.C. per DAY	2.00	20	CN-OST	345.2 \$34.52	0 \$0	0 \$0	0 \$0	0 \$0	345.2 \$690
Subcontractor Safety	SC1	U.C. per DAY	2.00	20	CN-OST	345.2 \$34.52	0 \$0	0 \$0	0 \$0	0 \$0	345.2 \$690

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Revision To Previous TPC Estimate 6304
 Project Location: **INEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.05.04.02 PUMP RINSE WATER FROM V-TANKS & ADD SOLIDIFICATION AGENT		SC1		10	CN-OST U.C. per DAY	345.2 \$690	0 \$0	0 \$0	0 \$0	0 \$0	345.2 \$690
Radiological Technician			2.00	20	\$34.52						
Aquaset Grout For Scrub Water		SC1	U.C. per LB	12,450.00	0	0	0.89	0.89	0	0	0.89
Memo: 150 lbs. of Aquaset grout is required per 45 gallons of water per FTI product information. Total liquid supernatent volume not in chemically oxidized sludge = 3,735 gallons x 150 lb. divided by 45 gallons = 12,450 lbs. at \$0.89/lb. excluding tax & freight.					\$0	\$0	\$11,081	\$0	\$0	\$0	\$11,081
Freight For Aquaset Grout		SC1	U.C. per LS	1.00	0	0	200	200	0	0	200
Memo: Material is available locally.					\$0	\$0	\$200	\$0	\$0	\$0	\$200
Subtotal					\$6,323	\$0	\$11,281	\$0	\$0	\$0	\$17,604
Sales Tax					\$0	\$0	\$665	\$0	\$0	\$0	\$665
INEEL/Subcontractor Overheads			26.00%		\$1,644	\$0	\$3,106	\$0	\$0	\$0	\$4,750
Subtotal Estimate											\$23,018
Escalation											
Contingency											
... Total 05.04.02.01.05.04.02 PUMP RINSE WATER FROM V-TANKS & ADD SOLIDIFICATION AGENT				180		\$14,773	\$0	\$27,907	\$0	\$0	\$42,680
05.04.02.01.05.04.03 TRANSPORT SOLIDIFIED RINSE WATER TO ICDF											
Construction Worker On Site (2 Workers)		SC1	U.C. per DAY	2.00	40	CN-OST \$34.52	1380.8 \$2,762	0 \$0	0 \$0	0 \$0	1380.8 \$2,762
Supervisor/General Foreman				2.00	10	CN-SUPR \$40.00	400 \$800	0 \$0	0 \$0	0 \$0	400 \$800
Subcontractor Engineering		SC1	U.C. per DAY	2.00	10	CN-OST \$34.52	345.2 \$690	0 \$0	0 \$0	0 \$0	345.2 \$690
Subcontractor Quality		SC1	U.C. per DAY	2.00	10	CN-OST \$34.52	345.2 \$690	0 \$0	0 \$0	0 \$0	345.2 \$690
Subcontractor Safety		SC1	U.C. per DAY	2.00	10	CN-OST \$34.52	345.2 \$690	0 \$0	0 \$0	0 \$0	345.2 \$690

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **REVISION TO PREVIOUS TPC ESTIMATE 6304**
 Estimate Number: **6304-A**

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

DETAIL ITEM REPORT

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
<u>05.04.02.01.05.04.03 TRANSPORT SOLIDIFIED RINSATE WATER TO ICDF</u>	<u>SC1</u>	<u>U.C. per DAY</u>	<u>2.00</u>	<u>20</u>	<u>CN-OST \$34.52</u>	<u>\$345.2</u>	<u>\$0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>345.2</u>
Radiological Technician						\$690		\$0	\$0	\$0	\$690
Subtotal											
Sales Tax											
INEEL/Subcontractor Overheads											
Subtotal Estimate											
Escalation											
Contingency											
-- Total 05.04.02.01.05.04.03 TRANSPORT SOLIDIFIED RINSATE WATER TO ICDF											
<u>05.04.02.01.05.04.04 DECON, DISMANTLE, & DISPOSITION COG EQUIPMENT</u>											
	<u>SC1</u>	<u>U.C. per DAY</u>	<u>40</u>	<u>320</u>	<u>CN-OST \$34.52</u>	<u>1380.8</u>	<u>\$0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1380.8</u>
Construction Worker On Site (4 Workers)						\$11,046		\$0	\$0	\$0	\$11,046
Subtotal											
Supervisor/General Foreman											
SC1											
Subcontractor Engineering											
SC1											
Subcontractor Quality											
SC1											
Subcontractor Safety											
SC1											
Radiological Technician											
Subtotal											
Sales Tax											
INEEL/Subcontractor Overheads											
Subtotal Estimate											
Escalation											
Contingency											
-- Total 05.04.02.01.05.04.04 DECON, DISMANTLE, & DISPOSITION COG EQUIPMENT											
<u>05.04.02.01.05.04.05 TRANSPORT CURED GROUTED HICs TO ICDF</u>											
	<u>SC1</u>	<u>U.C. per DAY</u>	<u>8.00</u>	<u>40</u>	<u>CN-OST \$34.52</u>	<u>1380.8</u>	<u>\$0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1380.8</u>
Construction Worker On Site (2 Workers)						\$11,046		\$0	\$0	\$0	\$11,046
Subtotal											
Sales Tax											
INEEL/Subcontractor Overheads											
Subtotal Estimate											
Escalation											
Contingency											
-- Total 05.04.02.01.05.04.05 TRANSPORT CURED GROUTED HICs TO ICDF											

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
06.04.02.01.05.04.05 TRANSPORT CURED GROUTED HIC's TO ICDF		SC1 U.C. per DAY	8.00	10	80	CN-SUPR \$40.00	400 \$3,200	0 \$0	0 \$0	0 \$0	400 \$3,200
Supervisor/General Foreman		SC1 U.C. per DAY	8.00	10	80	CN-OST \$34.52	345.2 \$2,762	0 \$0	0 \$0	0 \$0	345.2 \$2,762
Subcontractor Engineering		SC1 U.C. per DAY	8.00	10	80	CN-OST \$34.52	345.2 \$2,762	0 \$0	0 \$0	0 \$0	345.2 \$2,762
Subcontractor Quality		SC1 U.C. per DAY	8.00	10	80	CN-OST \$34.52	345.2 \$2,762	0 \$0	0 \$0	0 \$0	345.2 \$2,762
Subcontractor Safety		SC1 U.C. per DAY	8.00	10	80	CN-OST \$34.52	345.2 \$2,762	0 \$0	0 \$0	0 \$0	345.2 \$2,762
Radiological Technician		SC1 U.C. per DAY	8.00	10	80	CN-OST \$34.52	345.2 \$2,762	0 \$0	0 \$0	0 \$0	345.2 \$2,762
Subtotal						\$25,293		\$0	\$0	\$0	\$25,293
Sales Tax						\$0		\$0	\$0	\$0	\$0
INEEL/Subcontractor Overheads						\$6,576		\$0	\$0	\$0	\$6,576
Subtotal Estimate						\$3,665		\$0	\$0	\$0	\$3,665
Escalation						\$23,556		\$0	\$0	\$0	\$23,556
Contingency						\$0		\$0	\$0	\$0	\$0
-Total 06.04.02.01.05.04.05 TRANSPORT CURED GROUTED HIC's TO ICDF						\$69,090		\$0	\$0	\$0	\$69,090
06.04.02.01.05.04.06 SAMPLING		SC1 Construction Worker On Site (Samples)	165.00	2	330	CN-OST \$34.52	69,04 \$11,392	0 \$0	0 \$0	0 \$0	69,04 \$11,392
Memo: Assume 165 samples.											
Subtotal						\$11,392		\$0	\$0	\$0	\$11,392
Sales Tax						\$0		\$0	\$0	\$0	\$0
INEEL/Subcontractor Overheads						\$2,962		\$0	\$0	\$0	\$2,962
Subtotal Estimate						\$14,353		\$0	\$0	\$0	\$14,353
Escalation						\$1,651		\$0	\$0	\$0	\$1,651
Contingency						\$10,610		\$0	\$0	\$0	\$10,610
-Total 06.04.02.01.05.04.06 SAMPLING						\$26,614		\$0	\$0	\$0	\$26,614
06.04.02.01.05.05.01 DRIVE SHEET PILING		SC1 SHORING & PILING AROUND TANKS	260.00	0	CN-OST	0	0	0	784	0	784
									\$203,840		\$203,840

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INNEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
Subtotal				\$0	\$0	\$0	\$0	\$203,840	\$0	\$0	\$203,840
Sales Tax				\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
INNEEL/Subcontractor Overheads	26.00%			\$0	\$0	\$0	\$0	\$52,998	\$0	\$0	\$52,998
Subtotal Estimate											\$256,838
Escalation											
Contingency											
-- Total 06.04.02.01.05.05.01 DRIVE SHEET PILING			0			\$0		\$0			\$444,838
05.04.02.01.05.05.02 EXCAVATE SOIL & HAUL TO ICDF IN 10 CY ROLL-OFFS											
SC1	U.C. per DAY	23.00	90	CN-OST	3106.8	0	0	0	0	0	3106.8
Construction Worker On Site (Load approximately 2873 CY of Soil, 9 Workers)	U.C. per DAY	23.00	2,070	\$34.52	\$71,456	\$0	\$0	\$0	\$0	\$0	\$71,456
Memo: Based on 288 10 CY roll-offs being loaded, transported to ICDF, unloaded, & returned to TAN at a rate of 4 hours per roll-off. This equates to 1,152 hours with one roll-off or 230 hours = 23 days assuming the use of roll-offs. Crew of 9 includes 2 operators, 2 laborers, & 5 truck drivers. Assume that roll-off containers will be supplied by ICDF at no cost to the project.											
SC1	U.C. per DAY	23.00	10	CN-SUPR	400	0	0	0	0	0	400
Supervisor/General Foreman	U.C. per DAY	23.00	230	\$40.00	\$9,200	\$0	\$0	\$0	\$0	\$0	\$9,200
SC1	U.C. per DAY	23.00	0		0	760	0	0	0	0	760
Cat 330 1-3/4 CY Excavator	U.C. per DAY	23.00	0		\$0	\$17,480	\$0	\$0	\$0	\$0	\$17,480
Cat 950 4 CY Front End Loader	SC1	23.00	0		0	405	0	0	0	0	405
SC1	U.C. per DAY	23.00	0		\$0	\$9,315	\$0	\$0	\$0	\$0	\$9,315
SEMI TRACTOR 20 TON - 5 EACH	SC1	23.00	0		0	1895	0	0	0	0	1895
Memo: 5 semi tractors at \$379/day each = \$1,895/day.						\$43,585	\$0	\$0	\$0	\$0	\$43,585
SEMI-TRAILER RENTAL - 5 EACH (FOR ROLLOFFS)	SC1	23.00	0		0	750	0	0	0	0	750
Memo: Estimate \$15/hour or \$150/day per trailer.						\$17,250	\$0	\$0	\$0	\$0	\$17,250
4,000 Gallon Water Truck	SC1	23.00	0		0	314	0	0	0	0	314
Roll-Off Liners (Burrito Bag Liners)	SC1	288.00	0		\$0	\$7,222	\$0	\$0	\$0	\$0	\$7,222
Subcontractor Engineering	SC1	23.00	10	CN-OST	345.2	0	0	0	0	0	345.2
Subcontractor Safety	SC1	23.00	10	CN-OST	345.2	0	0	0	0	0	345.2

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Revision To Previous TPC Estimate 6304

Project Location: **INEEL - TAN**

Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
06.04.02.01.05.05.02 EXCAVATE SOIL & HAUL TO ICDF IN 10 CY ROLL-OFFS		SC1 Radiological Technician	U.C. per DAY	10 23.00	CN-OST \$34.52	345.2 \$7,940	0 \$0	0 \$0	0 \$0	0 \$0	345.2 \$7,940
Subtotal											
Sales Tax											
INEEL/Subcontractor Overheads	26.00%										
Subtotal Estimate											
Escalation											
Contingency											
— Total 06.04.02.01.05.05.02 EXCAVATE SOIL & HAUL TO ICDF IN 10 CY ROLL-OFFS				2,990		\$227,995	\$206,995	\$26,648	\$0	\$0	\$461,638
06.04.02.01.05.06.01 TANK/PIPE REMOVAL											
SC1 Construction Worker On Site (4 Workers)	U.C. per DAY	5.00	40 200		CN-OST \$34.52	1380.8 \$6,904	0 \$0	0 \$0	0 \$0	0 \$0	1380.8 \$6,904
SC1 Supervisor/General Foreman	U.C. per DAY	5.00	10 50		CN-SUPR \$40.00	400 \$2,000	0 \$0	0 \$0	0 \$0	0 \$0	400 \$2,000
SC1 Subcontractor Engineering	U.C. per DAY	5.00	10 50		CN-OST \$34.52	345.2 \$1,726	0 \$0	0 \$0	0 \$0	0 \$0	345.2 \$1,726
SC1 Subcontractor Quality	U.C. per DAY	5.00	10 50		CN-OST \$34.52	345.2 \$1,726	0 \$0	0 \$0	0 \$0	0 \$0	345.2 \$1,726
SC1 Subcontractor Safety	U.C. per DAY	5.00	10 50		CN-OST \$34.52	345.2 \$1,726	0 \$0	0 \$0	0 \$0	0 \$0	345.2 \$1,726
SC1 Radiological Technician	U.C. per DAY	5.00	10 50		CN-OST \$34.52	345.2 \$1,726	0 \$0	0 \$0	0 \$0	0 \$0	345.2 \$1,726
Subtotal											
Sales Tax											
INEEL/Subcontractor Overheads	26.00%										
Subtotal Estimate											
Escalation											
Contingency											
— Total 06.04.02.01.05.06.01 TANK/PIPE REMOVAL				450		\$39,363	\$0	\$0	\$0	\$0	\$39,363
06.04.02.01.05.06.02 TANK/PIPE DECON & SIZE REDUCTION											
Memo: Tanks will be decontaminated & size reduced vs. being grouted.											
SC1 Construction Worker On Site (4 Workers)											

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION**
 Project Location: **REVISION TO PREVIOUS TPC ESTIMATE 6304-A**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
<u>05.04.02.01.05.06.02 TANK PIPE DECON & SIZE REDUCTION</u>											
Memo:	Tanks will be decontaminated & size reduced vs. being grounded.										
Supervisor/General Foreman	SC1	U.C. per DAY	10.00	100	CN-SUPR	400	0	0	0	0	400
Subcontractor Engineering	SC1	U.C. per DAY	10.00	100	CN-OST	345.2	0	0	0	\$0	\$4,000
Subcontractor Quality	SC1	U.C. per DAY	10.00	100	\$34.52	\$3,452	\$0	\$0	\$0	\$0	345.2
Subcontractor Safety	SC1	U.C. per DAY	10.00	100	CN-OST	345.2	0	0	0	0	345.2
Radiological Technician	SC1	U.C. per DAY	10.00	100	\$34.52	\$3,452	\$0	\$0	\$0	\$0	345.2
Subtotal											
Sales Tax						\$31,616	\$0	\$0	\$0	\$0	\$31,616
INNEEL/Subcontractor Overheads			26.00%			\$0	\$0	\$0	\$0	\$0	\$0
Subtotal Estimate						\$8,220	\$0	\$0	\$0	\$0	\$8,220
Escalation											
Contingency											
<u>-- Total 05.04.02.01.05.06.02 TANK PIPE DECON & SIZE REDUCTION</u>											
<u>05.04.02.01.05.06.03 REMOVE SHEET PILING</u>											
Memo:	Tanks and piping will be crushed and disposed of at the ICDF.										
Construction Worker On Site (4 Workers)	SC1	U.C. per DAY	2.00	80	CN-OST	1380.8	0	0	0	0	1380.8
Memo: Crew of 1 operator, 2 truck drivers, & 1 laborer.						\$2,762	\$0	\$0	\$0	\$0	\$2,762
Supervisor/General Foreman	SC1	U.C. per DAY	2.00	10	CN-SUPR	400	0	0	0	0	400
						\$800	\$0	\$0	\$0	\$0	\$800
Subtotal											
Sales Tax											
INNEEL/Subcontractor Overheads			26.00%								
Subtotal Estimate											
Escalation											
Contingency											
<u>-- Total 05.04.02.01.05.06.03 REMOVE SHEET PILING</u>											
<u>05.04.02.01.05.06.04 TRANSPORT TANKS/PIPE/PILING FOR DISPOSAL</u>											
Memo:	Tanks and piping will be crushed and disposed of at the ICDF.										
Construction Worker On Site (4 Workers)	SC1	U.C. per DAY	40	80	CN-OST	1380.8	0	0	0	0	1380.8
Memo: Crew of 1 operator, 2 truck drivers, & 1 laborer.						\$34.52	\$0	\$0	\$0	\$0	\$2,762
Supervisor/General Foreman	SC1	U.C. per DAY	2.00	20	CN-SUPR	400	0	0	0	0	400
						\$40.00	\$0	\$0	\$0	\$0	\$800
Subtotal											
Sales Tax											
INNEEL/Subcontractor Overheads			26.00%								
Subtotal Estimate											
Escalation											
Contingency											
<u>-- Total 05.04.02.01.05.06.04 TRANSPORT TANKS/PIPE/PILING FOR DISPOSAL</u>											
Total			0			\$0	\$0	\$0	\$32,371	\$0	\$32,371

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
<u>06.04.02.01.06.04 TRANSPORT TANKS/PIPE/PILING FOR DISPOSAL</u>											
Memo:	<i>Tanks and piping will be crushed and disposed of at the ICDF.</i>										
Cat 950 4 CY Front End Loader	SC1	U.C. per DAY	2.00	0	CN-OST	0	\$1,620	0	0	0	\$1,620
30-Ton End Dump Trucks (2 each)	SC1	U.C. per DAY	2.00	0	CN-OST	0	\$950	0	0	0	\$950
Subcontractor Engineering	SC1	U.C. per DAY	2.00	10	CN-OST	345.2	\$690	0	0	0	345.2
Subcontractor Quality	SC1	U.C. per DAY	2.00	10	CN-OST	345.2	\$690	0	0	0	345.2
Subcontractor Safety	SC1	U.C. per DAY	2.00	10	CN-OST	345.2	\$690	0	0	0	345.2
Subtotal						\$5,633	\$2,570	0	0	0	\$8,203
Sales Tax						\$0	\$0	0	0	0	\$0
INEEL/Subcontractor Overheads				26.00%		\$1,465	\$658	0	0	0	\$2,133
Subtotal Estimate											\$10,336
Escalation						\$816	\$372	0	0	0	\$1,189
Contingency						\$6,112	\$2,789	0	0	0	\$8,901
--- Total 06.04.02.01.06.04 TRANSPORT TANKS/PIPE/PILING FOR DISPOSAL			160			\$14,026	\$6,399	0	0	0	\$20,425
<u>06.04.02.01.06.07 BACKFILL WITH CLEAN MATERIAL</u>											
Memo:	<i>Construction Worker On Site (Import & Compact Backfill, 6 Workers)</i>										
Construction Worker On Site (Import & Compact Backfill, 6 Workers)	SC1	U.C. per DAY	4.00	60	CN-OST	2071.2	\$0	0	0	0	2071.2
Supervisor/General Foreman	SC1	U.C. per DAY	4.00	40	CN-SUPR	400	\$0	0	0	0	400
Cat 950 4 CY Front End Loaders (2 each)	SC1	U.C. per DAY	4.00	0		0	\$1,600	\$0	0	0	\$1,600
Memo: One at V-Tank site and the other at borrow pit to load trucks.											
30-Ton Bottom Dump Trucks (2 each)	SC1	U.C. per DAY	4.00	0		0	\$1,900	\$0	0	0	\$1,900
Compactor Hand Operated	SC1	U.C. per DAY	4.00	0		0	\$92	\$0	0	0	\$92
Compactor Motor Operated	SC1	U.C. per DAY	4.00	0		0	\$1,268	\$0	0	0	\$1,268
4,000 Gallon Water Truck	SC1	U.C. per DAY	4.00	0		0	\$1,256	\$0	0	0	\$1,256

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INNEEL - TAN**
 Estimate Number: **6304-A**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Clean Material</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.05.07 BACKFILL WITH CLEAN MATERIAL		U.C. per DAY		10	40	CN-OST \$34.52 \$1,381	345.2 0	\$0	0	0	0	345.2 \$1,381
Subcontractor Engineering	SC1	U.C. per DAY		4.00	40	CN-OST \$34.52 \$1,381	345.2 0	\$0	0	0	0	345.2 \$1,381
Subcontractor Quality	SC1	U.C. per DAY		4.00	40	CN-OST \$34.52 \$1,381	345.2 0	\$0	0	0	0	345.2 \$1,381
Subcontractor Safety	SC1	U.C. per DAY		4.00	40	CN-OST \$34.52 \$1,381	345.2 0	\$0	0	0	0	345.2 \$1,381
Subtotal												
Sales Tax												
INNEEL/Subcontractor Overheads												
Subtotal Estimate												
Escalation												
Contingency												
-Total 05.04.02.01.05.07 BACKFILL WITH CLEAN MATERIAL				400		\$28,462	\$15,732	\$0	\$0	\$0	\$0	\$44,185
05.04.02.01.05.08 FINAL SITE RESTORATION & GRADING												
Construction Worker On Site (Grading, 3 Workers)	SC1	U.C. per DAY		30	60	CN-OST \$34.52 \$2,071	1035.6 0	\$0	0	0	0	1035.6 \$2,071
Construction Worker On Site (Final Cleanup Activities, 3 Workers)	SC1	U.C. per DAY		2.00	30	CN-OST \$34.52 \$2,071	1035.6 0	\$0	0	0	0	1035.6 \$2,071
Supervisor/General Foreman	SC1	U.C. per DAY		4.00	40	CN-SUPR \$40.00 \$1,600	400 0	\$0	0	0	0	400 \$1,600
Caterpillar 140 Road Grader	SC1	U.C. per DAY		2.00	0	\$0	530 \$1,060	\$0	0	0	0	530 \$1,060
4,000 Gallon Water Truck	SC1	U.C. per DAY		2.00	0	\$0	314 \$628	\$0	0	0	0	314 \$628
Subcontractor Engineering	SC1	U.C. per DAY		4.00	40	CN-OST \$34.52 \$1,381	345.2 0	\$0	0	0	0	345.2 \$1,381
Subcontractor Quality	SC1	U.C. per DAY		4.00	40	CN-OST \$34.52 \$1,381	345.2 0	\$0	0	0	0	345.2 \$1,381
Subcontractor Safety	SC1	U.C. per DAY		4.00	40	CN-OST \$34.52 \$1,381	345.2 0	\$0	0	0	0	345.2 \$1,381
HYDO SEED W/ MULCH AND FERT.	SC1	U.C. per ACRES		2.00	5	CN-OST \$34.52 \$345	172.6 0	\$2160 \$4,320	0	0	0	2332.6 \$4,665

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **REVISION TO PREVIOUS TPC ESTIMATE 6304**
 Project Location: **INEEL - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
06.04.02.01.06.08 FINAL SITE RESTORATION & GRADING									
SC1	U.C. per ALLOW	1.00	0	CN-OST	0	0	20000	0	20000
MONUMENTS					\$0	\$20,000		\$0	\$20,000
Subtotal					\$10,230	\$1,688	\$24,320	\$0	\$36,238
Sales Tax					\$0	\$0	\$1,459	\$0	\$1,459
INEEL/Subcontractor Overheads	26.00%				\$2,660	\$439	\$6,703	\$0	\$9,801
Subtotal Estimate									\$47,498
Escalation									
Contingency									
... Total 06.04.02.01.06.08 FINAL SITE RESTORATION & GRADING		290			\$20,750	\$3,424	\$62,290	\$0	\$0
06.04.02.01.05.09 INSTALL BOUNDARY MARKERS TO IDENTIFY AOC LIMITS									
U.C. per EA		14	56	CN-OST	483.28	50	5000	0	0
Install Concrete Monuments		4.00			\$1,933	\$200	\$20,000	\$0	5533.28
Install Institutional Controls Signs at Gates		U.C. per EA	1	CN-OST	34.52	0	100	0	\$22,133
Subtotal					\$138	\$0	\$400	\$0	
Sales Tax									
INEEL/Subcontractor Overheads	0.00%								
Subtotal Estimate									
Escalation									
Contingency									
... Total 06.04.02.01.06.09 INSTALL BOUNDARY MARKERS TO IDENTIFY AOC LIMITS		60			\$3,322	\$23	\$2,346	\$0	\$0
						\$99	\$10,094	\$0	\$0
06.04.02.01.06.10 PROJECT CLOSEOUT									
SC1	U.C. per WEEK	1.00	40	CN-SUPR	1600	0	0	0	1600
Project Manager					\$40.00	\$1,600	\$0	\$0	\$1,600
Subcontractor Engineering	SC1	U.C. per WEEK	1.00	CN-OST	1380.8	0	0	0	1380.8
Subcontractor Quality	SC1	U.C. per WEEK	1.00		\$34.52	\$1,381	\$0	\$0	\$1,381
Subcontractor Safety	SC1	U.C. per WEEK	1.00	CN-OST	1380.8	0	0	0	1380.8
					\$34.52	\$1,381	\$0	\$0	\$1,381

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Project Location: **INEEI - TAN**
 Estimate Number: **6304-A**

DETAIL ITEM REPORT

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

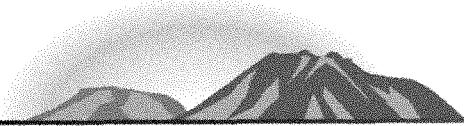
<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.02.01.05.10 PROJECT CLOSEOUT		SC1	U.C. per WEEK	1.00	40	CN-OST \$34.52	1380.8 \$1,381	0 \$0	0 \$0	0 \$0	0 \$0
Radiological Technician											1380.8 \$1,381
Subtotal Sales Tax INEEI/Subcontractor Overheads	26.00%										
Subtotal Estimate Escalation Contingency											\$8,976 \$1,032 \$0 \$1,882
-- Total 05.04.02.01.05.10 PROJECT CLOSEOUT			200			\$14,449	\$0	\$0	\$0	\$0	\$4,441
05.04.03 SAMPLE ANALYSIS											\$14,449
Contents Sample Analysis and Data Validation	BBW-A	U.C. per EA	165.00	0		0 \$0	0 \$0	2000 \$30,000	0 \$0	0 \$0	2000 \$30,000
SOIL CONFIRMATION SAMPLING	BBW-A	U.C. per LS	1.00	0		0 \$0	0 \$0	60000 \$60,000	0 \$0	0 \$0	60000 \$60,000
Subtotal Sales Tax INEEI/Subcontractor Overheads	0.00%										
Subtotal Estimate Escalation Contingency											\$143,400 \$47,541 \$328,403 \$0
-- Total 05.04.03 SAMPLE ANALYSIS			0			\$0	\$0	\$789,344	\$0	\$0	\$789,344
05.04.04 SECONDARY WASTE STREAM DISPOSAL FEES (PPES, Filter, Decon Liquids etc.)											
Allowance For Decon Liquids	BBW-A	U.C. per Gal.	100.00	0		0 \$0	55 \$5,500	0 \$0	0 \$0	0 \$0	55 \$5,500
Charcoal, HEPA and Roughing Filters	BBW-A	U.C. per CF	100.00	0		0 \$0	270 \$27,000	0 \$0	0 \$0	0 \$0	270 \$27,000

Project Name: **WAG 1 V-TANKS EX SITU CHEMICAL OXIDATION/REDUCTION/STABILIZATION**
 Revision to Previous TPC Estimate 6304
 Project Location: **INEEL - TAN**
 Estimate Number: **6304-A**

Client: **J. J. Jessmore**
 Prepared By: **B. W. Wallace/R. D. Roseland**
 Estimate Type: **Project Support**

DETAIL ITEM REPORT

<u>Code</u>	<u>Description</u>	<u>Contractor</u>	<u>Qty</u>	<u>Hrs</u>	<u>Resource</u>	<u>Labor</u>	<u>Equipment</u>	<u>Material</u>	<u>Subcontractor</u>	<u>Other</u>	<u>TOTAL</u>
05.04.04	SECONDARY WASTE STREAM DISPOSAL FEES (PPES, Filter, Decon Liquids etc.)	BBW-A	U.C. per CF	35.00	0	0	0	\$9,450	270	0	270 \$9,450
	Personnel PPE					\$0	\$0		\$0	\$0	
	Subtotal					\$0	\$0	\$41,950	\$0	\$0	\$41,950
	Sales Tax					\$0	\$0	\$2,517	\$0	\$0	\$2,517
	INEEL/Subcontractor Overheads		0.00%			\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal Estimate					\$0	\$0	\$5,114	\$0	\$0	\$44,467
	Escalation					\$0	\$0	\$29,893	\$0	\$0	\$5,114
	Contingency					\$0	\$0	\$0	\$0	\$0	\$29,893
-- Total 04.04 SECONDARY WASTE STREAM DISPOSAL FEES (PPES, Filter, Decon Liquids etc.)				0		\$0	\$79,473	\$0	\$0	\$0	\$79,473
	07 Material Handling Fees:		U.C. per LS			0	0	331	0	0	331
						\$0	\$0	\$331	\$0	\$0	\$331
			1.00	0							
	Memo:	Material Handling Fees of 12% have been applied to \$725,321. This amount is representative of a dollar value which will most probably have Material Handling applied to it. The estimate is a high level project support planning level estimate that has been compiled from various elements. These elements do not contain the level of detail that would provide a more concise level of Material Handling Fee.									
	Subtotal					\$0	\$0	\$331	\$0	\$0	\$331
	Sales Tax					\$0	\$0	\$0	\$0	\$0	\$0
	INEEL/Subcontractor Overheads		0.00%			\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal Estimate					\$0	\$0	\$38	\$0	\$0	\$38
	Escalation					\$0	\$0	\$92	\$0	\$0	\$92
	Contingency					\$0	\$0	\$0	\$0	\$0	\$0
	-- Total 07 Material Handling Fees			0		\$0	\$461	\$0	\$0	\$0	\$461
	Subtotal Ex Situ Chemical Oxidation & Grouting WAG 1 V-Tanks					\$4,447,741	\$403,667	\$2,825,232	\$2,993,198	\$333,262	\$11,003,100
	Sales Tax					\$0	\$0	\$165,483	\$0	\$0	\$165,483
	INEEL/Subcontractor Overheads					\$727,823	\$104,901	\$552,599	\$781,737	\$0	\$2,267,061
	Subtotal Estimate										\$13,435,644
	Escalation					\$637,819	\$58,485	\$418,981	\$434,118	\$43,824	\$1,593,227
	Contingency					\$2,575,282	\$266,967	\$2,064,227	\$2,695,861	\$94,271	\$7,696,609
	Total Ex Situ Chemical Oxidation & Grouting WAG 1 V-Tanks			81,216		\$8,388,666	\$834,020	\$6,126,523	\$6,904,913	\$471,357	\$22,725,480



Appendix E

Management Self Assessment - Field Operations Checklist

Management Self Assessment - Field Operations Checklist

ITEM NO DESCRIPTION

1.00 DOCUMENTATION

- 1.01 Environmental Checklist
- 1.02 Preliminary Documented Safety Evaluation
- 1.03 Final Fire Hazards Analysis
- 1.04 Final Criticality Safety Evaluation
- 1.05 Physical Security Plan - Operations
- 1.06 Security Contingency Plan
- 1.07 Hazards Analysis Document
- 1.08 Air Permitting Applicability Determination (APAD)
- 1.09 Storm Water Pollution Prevention Plan
- 1.10 Field Sampling Plan
- 1.11 Laboratory SOW/TOS
- 1.12 Health and Safety Plan
- 1.13 Test Plan
- 1.14 RWP/SWP
- 1.15 Waste Management/Waste Minimization Plan
- 1.16 Waste Disposition Disposal Form (WDDF)
- 1.17 ALARA committee approval of ALARA review
- 1.18 Outage request
- 1.19 Storm Water Pollution Prevention Plan
- 1.20 Vendor Data
- 1.21 Davis Bacon Determination
- 1.22 Organization chart
- 1.23 Contact phone list



1.24 Miscellaneous

2.00 EQUIPMENT

- 2.01 Equipment list available
- 2.02 Spare parts on hand
- 2.03 All maintenance current
- 2.04 Preventative maintenance scheduled
- 2.05 All calibrations current
- 2.06 Equipment walkdown completed
- 2.07 Operations and maintenance manuals available
- 2.08 Preoperational checklist(s) available
- 2.09 All PPE available
- 2.10 MSDSs available
- 2.11 Eye wash, first aid kits, and fire extinguishers current
- 2.12 Cell phones and radios operable
- 2.13 Logbook(s) available and utilized

3.00 TRAINING

- 3.01 Training needs identified
- 3.02 Needed training documented in TRAIN
- 3.03 Pre-job briefing completed
- 3.04 Personnel know location of MSDSs
- 3.05 Personnel demonstrate appropriate level of conduct
 - of operations
- 3.06 Miscellaneous

4.00 MCP-3562 Procedures

-
- 4.01 Walkdown conducted of TPR and MCP-3562 Hazard
 - 4.02 Screening Checklist completed
 - 4.03 JSA completed (w/approved DAR)
 - 4.04 JSA training completed
 - 4.05 TPR approved by OSB and issued by
 - 4.06 document control
 - 4.07 TSRs implemented in procedure
 - 4.08 SAR commitments implemented
 - 4.09 Miscellaneous

5.00 SCHEDULING

- 5.01 Appropriate resources scheduled
- 5.02 On POW
- 5.03 Arrangements for POD & POW updates
- 5.04 Check in w/Shift Supervisor prior to start
- 5.05 Check out each day w/Shift Supervisor
- 5.06 Turnover checklist

6.00 SITE

- 6.01 Site access controls in place
- 6.02 Site access restrictions on signs
- 6.03 Housekeeping checked
- 6.04 Noise signs in hearing protection areas
- 6.05 Emergency evacuation routes posted
- 6.06 Personnel complying with posted signs
- 6.07 Labelling complete
- 6.08 All equipment installed
- 6.09 Backup alarms on all heavy equipment

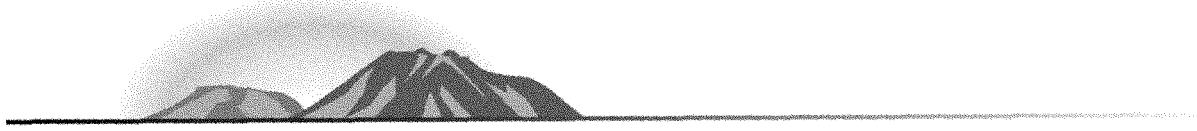


7.00 MISCELLANEOUS

7.01 Any outstanding NCRs or DRs

Signature

Date



Appendix F

Relevant Engineering Design Files

Relevant Engineering Design Files

The following list of Engineering Design Files (EDF) were developed in coordination with the conceptual design. These EDFs document the design decisions made in conceptual design in greater detail than the CDR and provide proof of concept information not found in this document. EDFs are INEEL controlled documents and may be designated for external release.

EDF-3650, 2003, "Offgas System Conceptual Design, ExSitu Chemical Oxidation, Reduction, Stabilization of the V Tanks at Test Area North Operable Unit 1-10", Rev. 0, June 2003.

EDF-3697, 2003, "Removal, Oxidation, and Grouting of Liquid Waste from TAN Tanks V-1, V-2, V-3, and V-9 WAG 1, OU 1-10", Rev. 0, June 2003.

EDF 3719, 2003, "Exposure Estimates for TAN V-Tanks Ex Situ Treatment Shipping Containers" Rev. 0, June 2003.

EDF-3780, 2003, "TAN V Tanks Civil Site Design", Rev. 0, June 2003.

EDF 3781, 2003, "Exposure Estimates TAN V-Tanks Process Equipment", Rev. 0, June 2003.

EDF-3782, 2003, "Assessment of Corrosion Issues Associated with the Processing and Storage of V-Tank Waste", Rev. 0, June 2003.

EDF-3783, 2003, "Grout Formulation for the Stabilization of Oxidized V-Tank Waste", Rev. 0, June 2003.

EDF-3784, 2003, "Reaction Vessel and Waste Processing Campaign for Chemical Oxidation of V-Tank Waste", Rev. 0, June 2003.

EDF-3791, 2003, "Mass Balance, Reaction Kinetics, and Vapor Pressure Calculations Supporting the Chemical Oxidation of V-Tank Wastes", Rev. 0, June 2003.

EDF-3795, 2003, "LDR Treatment Requirements for Chemical Oxidation and Stabilization of the V-Tank Waste", Rev. 0, June 2003.





Appendix G

Project Risks and Mitigation



V-Tank Treatment and Stabilization

January 28, 2003

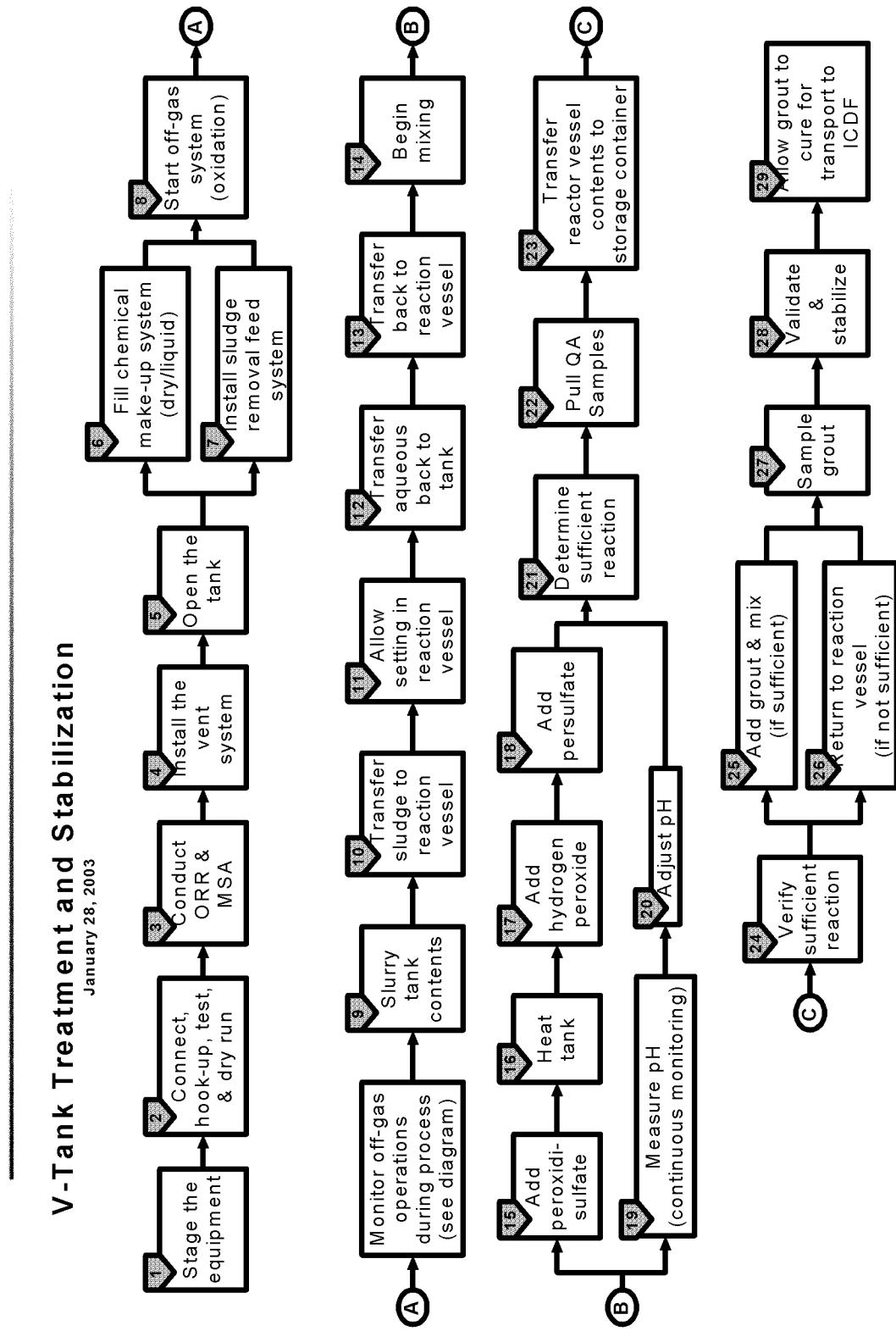


Figure H-1 V-Tank treatment and stabilization process



The steps listed in the table correspond with Figure H-1.

Table H-1 - Project Operational Risks

Activity	Potential Failure	Preventive Measures	Mitigating Actions	Design Considerations/ Safety Documents	Comments
Step 1: Stage the Equipment					
10-12 skids. Trailer for controls. Secondary containment and shielding.	Hoses will not reach between systems.	Design to compensate for hoses.	Add additional hose.	More/spare hoses and connections.	
10-12 skids. Trailer for controls. Secondary containment and shielding.	Not enough space for all equipment.	Planning. Avoid areas of sloughing/subsidence.	Alternate layout.		
10-12 skids. Trailer for controls. Secondary containment and shielding.	Not an adequate power supply.	Use a generator for all power. Requires secondary containment.		Diesel generator. NEPA approved.	
				Replacements. Repairs. Long-lead spares. Redundant key components(systems).	

Activity	Potential Failure	Preventive Measures	Mitigating Actions	Design Considerations/ Safety Documents	Comments
Step 2: Connect, hook-up, test, and dry run					
Operate/test equipment	Instruments fail. Equipment failure with blower or GAC.	Readiness issues. Training. Procedures.		Replacements/repairs.	
Step 3: Conduct ORR and on MSA					
Step 5: Open the Tank					
Pull the lid off the 6' manway.	Industrial hazards.		JSA and Personnel Walkdown		Two people to lift lid.
Barricade the 6' culvert (e.g. railing)	Barricade breaks. Someone get through the barricade.	IH and Radcon control. Admin procedures and design.	Emergency action retrieval.		
Set up containment around opening (e.g. tent, vent trunk)	Uptake of contamination. Precipitation into the tank. Containment could fall down.	Secure and seal containment. HEPA ventilation. Positive ventilation.	Reinstall.	Comply with Rad Eng procedures (RWP). Confined space permit/procedures.	Containment needed for weather. Man way comes up above ground about 20 inches.
Access the manway and remove the flange off the 20" manhole.	Industrial hazards. Guideline violations. Can't get bolts off.		Cut/grind bolts off.	Grinder (to cut bolts). Modify confined space permit if bolts are cut.	Use ladder and unbolt flange. 8' from top to bottom.
Install equipment tool fixture (interface).	If it does not cover entire opening, it could break. Allows tools to fall into tank.	Design to clamp. Robust design. Tether the tools.	Get another tool.	Keep pump suction and tools supported. Clamping device attachment. Allows ability to raise and lower equipment. Fluidic pulse jet mixing line is ridged.	G-5



Activity	Potential Failure	Preventive Measures	Mitigating Actions	Design Considerations/ Safety Documents	Comments
Step 4: Install Vent System					
Assemble and attach vent system to vent riser.	Vent blower could fail. HEPA could get wet. Hook it up backwards.	Stop work and fix. Consider installation of charcoal filter or dilution air. Human factors design. Delta P measurement across HEPA.	Replace blower or HEPA filter.	Vent away from people.	
Step 6: Fill Chemical Make-Up System					
Pre-made sodium hydroxide.	Add wrong chemical. Uncontrolled heat of solution. Spill chemical.	Labeling, Admin controls. Secondary containment.	Stop work and develop recovery plan.	PPE	Human factor issues in the difficulty in addition of chemicals.
Persulphate.					Dry powder. One of least toxic for use intended.
Peroxide.					
Step 7: Install sludge removal system (AEA)					
Insert fluidic pulse jet mixing piping into the tank and anchor to flange.	Bend or break pipe. Drop pipe through into the tank. Personnel space limitations.	Design so the pipe cannot be dropped into tank. Mock-up activity.	Develop recovery plan.	Need ability to move pipe up and down – manually.	
Install cameras and lighting.	See above. Fit personnel with equipment. No power to cameras and lighting. Bulb breaks. Pan and tilt fails.	Mock-up. Tether equipment and lock in place. Design flange to remove camera and lighting.	Leave it and replace.	Pan and tilt ability. Zoom ability. Ability to remove camera without removing flange. Adjust camera and lighting vertically the full height of tank. Clamp rod to flange.	Small cameras have some articulation.

Activity	Potential Failure	Preventive Measures	Mitigating Actions	Design Considerations/ Safety Documents	Comments
Connect removal piping to MF.JPMS.	Connect incorrectly and causes a leak or leads to a blowout. Connect to wrong stub.	Different type fittings. Design. Color codes/ labeling.	Repair, clean, develop spill plan.	Flex hose to MF.JPMS to allow flexibility with bends. Ability to connect to other tanks. Have a catch pan at the bottom or bag. Keep the flexible hose connected. Ability to drain is an issue.	
Pre-test monitoring equipment (cameras, lights, etc.)	Does not work. Not getting view wanted.		Adjust camera view. Replace bulbs.	Need to know the orientation of the camera. Need an index mark.	
Step 8: Start Off-Gas System					
Verify the air inleakage valve is operational.	Valve or control failure.	Pressure sensor if automated-should fail-closed. Design for low-pressure vacuum.	Replace	Consider using automated system to keep flow constant at the blower. Control loop. Should fail-closed. Could use a passive system to "suck in" or close (may need a HEPA on the back end).	
Turn on the blower.	Does not work. No power to blower. Blower motor burns out. Bearing failure.	Standard size blower that can be replaced.	Repair/replace.		
Turner on the heater.	See above for blower.	Standard heater to easily replace. Design for ease of replacement.	Repair/replace.	Resistant heater. Insulated filer houses. Surface area. Electric off-gas heater. Withstand off-gas constituents	
Turn on cooling water for off-gas.	Pump fails. Breach in system.	Standard pumps.	Repair/replace.	Consider a closed-loop system. Use water for wash down. May need a secondary coolant system. Need to investigate.	
Turn on stack monitoring system if applicable.	Instrument failure. Inleakage into sample line.		Repair/replace.		



Activity	Potential Failure	Preventive Measures	Mitigating Actions	Design Considerations/ Safety Documents	Comments
Step 9: Slurry Tank Contents					
Turn on the MFJPMs.	System fails. Blows out charge vessel-causing contaminated airflow.	Design the tank vent to handle burst of pressure. Accept the risk.	Shut down air supply, replace HEPA, and clean up contamination.	Need to know how long to run this system. Mock up testing may be needed. Want to try to avoid leaving solids in bottom, but we don't know what is on the bottom.	
Divert sludge to reaction vessel.	Valves don't open. Line plugs or leaks. Overfill reaction vessel (greater than batch volume size). Material/chemical incompatibility. Worker exposure.	Ability to transfer back to tank. Need a valve on transfer line that goes both ways. Provide protective shielding.	Drain system and repair valves if rad fields permit. Transfer back to tank	Automatic valving. Will have to slurry and divert. These are big diameter nozzles. Small batch going big tank should preclude need for overflow valve. If you are intending to go back during filling, then a dip tube could be used if using MFJPMs as the force, as opposed to gravity drain. Assume overfilling is batch volume size. Consider using jets rather than paddles to avoid the "dead" spots.	Likelihood of valves failing is low. A lot of headspace in tank.
Step 10: Transfer sludge to reaction vessel. (Note: Transfer/leave additional aqueous to reaction vessel as required for the V-9 tank only.)					
Allow solids to settle.	Settle on bottom and can't get to it.	Design to keep solids suspended. Consider a recirculation loop to keep solids suspended.	Resuspend solids.	Consider a smaller diameter tank with a specific shaped bottom to allow easier access to solid. Is a bottom drain desired. Or you may want a dip tube for ease of transfer out of tank to remove heel. Dip tube should be at fixed height.	Only done part of the time. May only be done at the end.
Step 11: Allow Settling in Reaction Vessel					
20 ppm of Cr ⁶⁺ in the oxidized waste returned to the V-Tanks could be corrosive	Maintain pH				
Oxidized waste not sufficiently cooled prior to being transferred back to the V-Tanks for storage prior to stabilization could cause excessive tank corrosion	Cool waste prior to storage				



Activity	Potential Failure	Preventive Measures	Mitigating Actions	Design Considerations/ Safety Documents	Comments
	Insufficient reactor vessel cooling capacity could result in overheating of the reactor vessel at proposed oxidant addition rates.	Design in adequate cooling capacity			
	Reaction vessel mixer/agitator failure would create delays while repaired. Delays could be extensive if new mixer/agitator must be shipped in.	Acknowledge lead time			
Step 12: Transfer aqueous back to tank					
	Insufficient time will be available for completing the oxidation operation while weather conditions are favorable and oxidized waste returned to the V-Tanks will be stored for an additional year prior to stabilization.	Proper Planning			
	Pump sludge back to V-Tank.	Same as when you transfer tank, but take liquid from the top.		Use recirculation system to pump back into tank if you are not using the MFJPMS. Have it already leak tested.	
	Internal sulfate attack (delayed ettringite formation) could lead to expansion of the stabilized waste and the subsequent rupture of the storage containers prior to disposal at ICDF	Adequate Bench Scale and Field Scale testing			
Step 13: Transfer back to reaction vessel (Same as #11)					
Step 14: Begin mixing					
	Turn on system as soon as sufficient volume is in reaction vessel.	System dies, motor fails.	Design. Redundant system (second mixer and/or second reaction vessel and/or using the pump from the recirc system)	Pump out of tank and into a second reaction vessel.	Mixing is for reaction to occur.
					The second reaction vessel could be used to accept the mixture if it is finished with its current batch. Rad environment may necessitate redundant equipment.



Activity	Potential Failure	Preventive Measures	Mitigating Actions	Design Considerations/ Safety Documents	Comments
Step 15: Add persulfate	Feed in persulfate (granulated pellets) This is added to reduce VOCs. That is why it is added first. Should be part of testing program	Plugs system because it cakes. (Caking at interface) Design – feed system and purge system. Idea: Auger, continuous feed system-continuous cleaning. System to monitor rate and levels. Variable rate. Monitoring levels could be visual. (Dual system) Feed excessive amounts.	Flush, dry, and restart feed.	Need to know how much has been added. Not a liquid. Feed through a tube or auger. Add in through the top. Should be outside the sealing barrier to the tank to avoid issues with warm vapor rising. Idea: use discrete packages of material. Could be metered in through the pump system or the recycle system. Requires 30 MT for total volume if peroxidisulfate were the only thing being used. Relates to sizing the hopper. Has the potential to leave a residue in the reaction vessel.	Hard to monitor-may have to add a drain in bottom of reaction vessel to ensure the tank is empty each time. Then add chemicals in a batch. However, we don't know what we have in the sludge. Need to monitor closely-material is part of the safety envelop. Could have the feeder control your rate and monitor your RPM of the feeder. Variable drive to add different amounts, but have a maximum rate. You could design the system to the maximum case of overfeeding and boiling (off gas system). However, we may not be able to design to 350 atmospheres. Benefit with continuous feed is not all the chemical is in the tank in case a problem occurs. Monitor and control the rate and magnitude of the mass of the chemical.



Activity	Potential Failure	Preventive Measures	Mitigating Actions	Design Considerations/ Safety Documents	Comments
Step 16: Heat Tank	<p>Turn it on.</p> <p>Requirements:</p> <ul style="list-style-type: none"> Electric heat and water-cooling. Systems need to be repairable. <p>Feedback loops and control system.</p>	<p>Too much heat causing aggressive reaction or melting of tank.</p> <p>Design to worse case scenario.</p> <p>Cooling system, if required.</p> <p>Monitor the rate and amount of chemical that is being added.</p> <p>Design for pressure relief.</p> <p>Failure of thermocouples.</p>	<p>Add thermal mass (water or more waste) to reduce reaction.</p> <p>Stop mixing to stop the reaction.</p> <p>Stop the oxidant.</p> <p>Manual control option.</p> <p>Administrative controls.</p> <p>Redundancy in thermocouples.</p> <p>Design to fail-safe. (SCR controllers may not be fail safe)</p>	<p>Redundant thermocouples. Address overheating and pressurization scenarios.</p> <p>Will need to be externally insulated, which could be removed if cooling is necessary.</p> <p>Try to keep cooling and heating systems separate. How corrosive will this environment be? (pH 2)</p> <p>Can't interfere with mixing equipment.</p> <p>Idea: Put heating and cooling capability in the recycle loop. Do one on the recycle loop and one on the tank. Since cooling coils are unlikely to fail, so put them on the tank and heat system on the recycle loop.</p> <p>Do we to cool? Do we need to heat for the first stage? If you don't use the MFJPMs to empty the tank, some way to pump out the tank will be need if repairs become necessary.</p>	<p>What type of heat and do we need cooling?</p> <p>How quickly would it have to be cooled?</p>



Activity	Potential Failure	Preventive Measures	Mitigating Actions	Design Considerations/ Safety Documents	Comments
Step 17: Add Hydrogen Peroxide					
Turn on Feed System:	Tank overheats.	Add the chemical to a cold tank – non-heated reaction vessel. Larger surge tank on condenser with cold water to stop excursion. Cooling system if required.		Gravity feed or pump feed. Control valves on feed system Minimize amount of equipment. Design mixer to resuspend everything after it starts up. ‘Stop’ button to shut down all the systems. Foam detection system (sight glass and camera).	How do we detect foaming? Do we need a camera? Density based level indicator?
				If foaming is an issue, then consider a continuous feed. Liquid feed system outside shielding of the tank to repair if it fails. Look at the sequence of adding chemicals based on tank heat and controllability.	
				Consider using a recycle system and a paddle system (redundant mixing).	
	Create foam.	Additional headspace in reaction vessel. Consider design of water spray system if needed. Mechanical defoaming grids in tank.	Use water spray or other defoaming agent		
	Feed system fails due to operator error, etc.	Fail closed control valve.			



Activity	Potential Failure	Preventive Measures	Mitigating Actions	Design Considerations/ Safety Documents	Comments
	Add too much chemical.	Design small feed tank to avoid dumping large amounts into reaction vessel. (Repeat for Step 15.) Admin controls.	Stop adding chemical and stop mixing. Add water if necessary.		
	Step 18: Add Persulfate See Step 15				



Activity	Potential Failure	Preventive Measures	Mitigating Actions	Design Considerations/ Safety Documents	Comments
Step 19: Measure pH	Continuous monitoring	Monitor fails or out of calibration.	Calibration. Redundant system is critical. Litmus test at sampling port. Depending upon reliability, consider replacing after each batch.	Repair/replace when tank is empty.	Rely on solution being recirculated through them. Plugging could be an issue. There are others that just contact the solution without flow through. May not get full oxidation if pH is not at appropriate level. Batch would have to be reprocessed.
Step 20: Adjust pH	Sodium hydroxide reagent system.	Repeat from peroxide failures. Add too much hydroxide.	See pH measurement.		Do we need two-sided pH control. Do we need to consider adding acid? Sulfate will create acid.



Activity	Potential Failure	Preventive Measures	Mitigating Actions	Design Considerations/ Safety Documents	Comments
Step 21: Determine sufficient reaction					
Pull sample – liquid and solid.	Unrepresentative sample due to inadequate mixing or sampling device.	Quality control. Sample design. Process/ procedure. Duplicate samples (per lab protocols). Do intermediate sampling of off-gas.	Repeat sample.	Remote sampling capability due to rad and venting issues. (Pump loop or recirc loop) Can we infer from aqueous batch that it meets disposal criteria. Need something fast. On-site-trailer. There are indirect measures for process control. May have three phases of sampling-analysis may have to be looked at separately. Must have the contents well mixed to take good sample.	Where to do analysis. Is dedicated analytical capability needed. Statistical sampling. Solids and liquids – how do we get a rep. Sample with rapid turnaround.
Analyze sample	Incorrect analysis – false positive. (Incorrect flushing of sampler) False negative- more reagent or time.	QA protocol or standard. Use established and proven methods.	Batch has been emptied and will have to be reprocessed.	Can we get a 2-hour turnaround? Drive samples to INTEC.	
	Slow turnaround from lab – process delays.	Do on-site (TAN).			
	Ribbon mixer failure would cause delays as well as a dilemma of what to do with the rinse/grout/oxidized waste mixture that would be created. The mixer would need to be rinsed out while repairs are performed.				



Activity	Potential Failure	Preventive Measures	Mitigating Actions	Design Considerations/ Safety Documents	Comments
	Ribbon mixer failure would cause delays while repairs are performed. Also, due to the presence of grout, the mixer would need to be rinsed so the grout would harden in the mixer and cause the mixer to be inoperable. This mixture, rinse/grout/oxidized waste, would need to be dealt with in a different method.				
Step 29: Allow Grout to cure for transport to the ICDF		Internal sulfate attack (delayed ettringite formation) could lead to expansion of the stabilized waste and the subsequent rupture of the storage containers prior to disposal at ICDF			

